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The Use of a Habit Reversal Treatment for chronic Facial Pain in a Minimal Therapist Contact Format

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A dissertation submitted for partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University.

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List of Abbreviations

BDI	Beck Depression Inventory
BSI	Brief Symptom Inventory
CI	Confidence Interval
EMG	Electromyography
MCT	Minimal Contact Therapy
MPD	Myofascial Pain Disorder
OH	Oral Habits
SH	Self Help
STAI	State-Trait Anxiety Inventory
TM	Temporomandibular
TMD	Temporomandibular Disorder/Dysfunction
TMJ	Temporomandibular Joint
VAS	Visual Analog Scale

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ABSTRACT

The Use of a Habit Reversal Treatment for Chronic Facial Pain in a Minimal Therapist Contact Format

By Donald R. Townsend, M.A.

A dissertation submitted for partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University, 1999.

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The temporomandibular disorders (TMD) diminish quality of life and can be costly for both individuals and the health care system. Stress from a variety of factors, including daily hassles and maladaptive thought patterns, has been commonly cited as a contributing factor in TMD. Support for this hypothesis comes from research demonstrating masseter muscle hyperactivity in response to experimental stressors, such as painful or frustrating stimuli. Many believe the link between stress and increased masseter muscle pain is parafunctional oral habits, including teeth clenching, grinding, and lip biting.

Habit reversal has been used effectively to treat parafunctional oral behaviors and facial pain. Treatment entails teaching individuals to detect, interrupt, and reverse maladaptive oral behaviors. Positive results have been achieved in a group treatment format. Problems with prior research suggest that high attrition resulted from scheduling

demands of the group treatment format. To address these problems, this study modified the habit reversal protocol used by Gramling, et al. (1996, 1999) into a minimal contact therapy (MCT) format. MCT has been applied effectively with many problem behaviors, including chronic headaches.

Twenty individuals (10-treatment and 10-waitlist control) participated in the seven-lesson, manualized treatment. Participants completed a pre- and post-treatment assessment and an 18-month follow-up. Individuals met with the therapist one time and received weekly feedback via telephone or e-mail. Participants submitted homework and quizzes for each lesson. Those in the control condition spoke with the therapist on a weekly basis as an attention control. Treatment lasted a mean of about 20 weeks.

Significant improvement in pain severity including mean pain levels, highest weekly pain levels, and number of pain free days was noted in the treatment group relative to controls. The number and frequency of maladaptive oral habits revealed a strong trend towards lower levels from pre- to post-treatment for individuals in the treatment condition relative to controls. Additional measures of pain symptomotology and personality functioning also revealed significant improvements in the treatment group. Results suggest that a standardized treatment for facial pain is well suited for adaptation to a MCT format. Minimal contact therapy is flexible and as effective as similar group treatments.

Introduction

Temporomandibular disorders (TMD) have been recognized for over 50 years, but only widely diagnosed since the 1970s. The symptoms often mimic those of other disorders, and therefore it has often been used as a 'wastebasket' diagnosis for difficult symptom presentations (Bush and Dolwick, 1995). The defining signs and symptoms of TMD have varied in focus from within and without the temporomandibular joint itself, resulting in a broad category of loosely organized disorders (Gale, 1986). Within this diagnosis a broad array of disorders have been categorized, including degenerative joint disorders, malocclusion (improper bite) and myofascial pain.

Most cases of TMD begin with mild symptoms of the joint (clicking, popping, etc.) or muscles (tension, fatigue, etc.). Tension is most common and often results during periods of stress and anxiety. For individuals with TMD, the pain associated with difficulty opening one's mouth, or chewing food can make life extremely difficult. Investigations in the field of TMD research are still in its infancy and there is no reliable evidence regarding the progression of symptoms. Only sensitivity of the masseter muscles has proven to be a highly sensitive and specific method to detect TMD (Bush & Dolwick, 1995).

In the search for treatment, individuals will often seek help from many diverse disciplines including dentistry, physical medicine, neurology, chiropractic care, psychology, etc. Due to disagreement over diagnosis and the involvement of many

disciplines, insurance companies often get confused and many times will require a lengthy description of symptoms, and refuse to pay for any treatment short of surgery (Bush & Dolwick, 1995). Psychological interventions seem to be a last resort for individuals convinced that their difficulties are entirely physical in nature. Once a clear picture is drawn for individuals to illustrate the role that psychological factors can play, acceptance or insight often occurs. Numerous psychological interventions have been tried for individuals with chronic facial pain, including stress management training (e.g. Turk, Rudy, Kubinski, Zaki, & Greco, 1996), biofeedback (Carlsson, Gale, & Ohman, 1975), and habit reversal (Gramling, Neblett, Grayson, & Townsend, 1996). These techniques have demonstrated efficacy in reducing complaints of facial pain and tension (Brooke & Stenn, 1983; Clarke & Kardachi, 1977; Gessel, 1975; Gramling, et al., 1996).

Temporomandibular Joint Dysfunction

Anatomy of TMD

At the point where the lower jawbone attaches to the skull lies the temporomandibular joint (TMJ). TMJ disorder is a popular term to refer to pain and discomfort of the jaws. It is often characterized by pain in the muscles of mastication and abnormal TMJ function. This term has been replaced in recent years with the term TMD. The TMDs are a cluster of disorders which include TMJ and myofascial pain disorder. These two categories of TMDs are differentiated by the presence (TMJ) or absence (MPD) of radiographic evidence of joint abnormalities. This later condition is characterized by painful symptoms associated with the covering of the fascia on the muscles associated with the joint (Kaplan & Assael, 1991). A common rheumatologic

syndrome confused with the TMDs is fibromyalgia, which manifests itself as diffuse, chronic musculoskeletal aching and soreness. There is considerable overlap between these symptoms and symptoms from related disorders including degenerative joint diseases, etc. Therefore, it is suspected that TM disorders are a family of conditions rather than one unitary disorder (Bush & Dolwick, 1995; Dworkin & LeResche, 1992).

Several physical phenomenon appear to result in the symptoms associated with TMD. Disk-condyle derangement (misalignment of the joint and associated structures) often leads to the presentation of various noises in the joint, including clicking, popping, and crepitous. Malformations of this structure are thought to be progressive in nature, with the final results including crepitous and pain (Holmlund, Hellsing, & Axelsson, 1989).

Muscles, arteries and nerves also play an important role in the development and maintenance of facial pain. The masseter muscle (primary muscles of mastication or chewing) supplies power during the closure of the jaw. Several other muscles of the head and neck are often involved when individuals describe their facial pain. Some of these include the lateral and medial pterygoid muscles (muscles involved in jaw closure and positioning), the temporalis, frontalis, and even the trapezius (Kaplan & Assael, 1991). The masticatory muscles are supplied by the maxillary artery which branches from the external carotid, while the TMJ region is enervated by the mandibular branch of the trigeminal nerve (V).

Signs and Symptoms of TMD

There are four primary symptoms of TMD that clinicians generally agree upon.

These include: 1) pain in the TM joint, the surrounding musculature and adjacent soft tissues, 2) TM joint sounds when moving the jaw, 3) pain in these areas on digital palpitation, and 4) limitations in movement of the jaw. Additionally, other signs or symptoms might include chronic muscular tension, headache, neckache, ear problems, dizziness, visual disturbances, sinus complaints, etc. (Bush & Dolwick, 1995).

Mandibular pain appears to be the most common reason that individuals initiate treatment although it's presentation is often varied (Katz & Rugh, 1986). Frequency and intensity of pain is often quite variable, with intensity often ranging from mild to severe. In one study, half of the individuals presenting with facial pain reported their pain as constant, while about 15% reported it as occasional (Bush, Whitehill, & Martelli, 1989). Pain in the masticatory muscle is often the primary source. It is often manifest as chronic tension, fatigue, tenderness or cramping in the muscle. A number of other symptoms occur with lesser frequency in individuals presenting with facial pain. These include limited opening of the mouth (about 35% of persons presenting with facial pain), crepitous (31%), joint soreness (31%), muscle soreness (24%), clicking noises (21%), etc. (Holmlund, et al., 1989).

Prevalence of TMD

Due to the heterogeneity of symptoms in individuals presenting with TMD, it is difficult to determine the prevalence of this disorder. It is estimated that about 20% of individuals presenting with facial pain in dental clinics suffer from misdiagnosed and overlooked TMD. Over 25 studies have been conducted across the world, including Europe, Taiwan and Tanzania and have estimated the prevalence of signs and symptoms

as ranging from 26-75% of the population (Solberg, Woo, & Houston, 1979), with more signs reported by examining physicians than reported by the individual. Only about 5% to 7% of individuals with TMD actively seek treatment. The number of individuals suspected of having TMD are estimated by clinicians to be about four times higher than the number of those who present for treatment (Katz & Rugh, 1986).

No relation between age and total symptom complex has been firmly established, although some specific symptoms tend to increase with age. Prevalence rates differ as a function of gender, however. Women tend to report symptoms of facial pain at a rate nearly twice that of males. The real difference between the sexes appears in clinical cases, where the ratio of women to men presenting with TMD symptoms ranges from 2 females for each male, to as high as 9 females per male (Bush & Dolwick, 1995). It seems that although there are few gender differences in regards to symptoms, women present for treatment far more frequently than do men. It seems likely that psychosocial factors account for a large portion of this difference. Bush and Dolwick (1995) provide a comprehensive review of age and gender composition broken into different patterns of symptom presentation.

Psychological Characteristics of Individuals with TMD

Early work examining psychological characteristics of individuals presenting with facial pain was reported by Gessel and Alderman (1971). This work suggested that there were different profiles; one with depressive and dependent features, and another with perfectionistic and Type A behavior patterns.

Additional work by Rudy, Turk, Zaki, and Curtin, (1989) demonstrated that TMD

patients could be reliably classified into one of three distinct groups based on the Multidimensional Pain Inventory. The Multidimensional Pain Inventory assesses psychological distress, perceived impact of pain in the individual's life, and the reaction of significant others to the individual's pain. Three categories result from this type of classification, including dysfunctional (46% TMD individuals), characterized by high levels of pain, distress and life interference with a low amount of perceived control; interpersonally distressed (22%), characterized by low social support and high negative responses of others; and adaptive copers (32%), individuals who present with low levels of affective distress and life interference, an increased feeling of control, and a higher general activity level.

Other research has analyzed the psychological characteristics that contribute to successful treatment. Research by Gale and Funch (1984) produced results that indicated that motivation level, pretreatment depression level and locus of control were key factors in successful treatment of TMD. Surprisingly, neither clinical (pain level or length of pain) nor demographic characteristics yielded better predictive capabilities. Gessel and Alderman (1971) also believed that the presence of depression was indicative of whether the individual responded to relaxation treatment, with individuals exhibiting depressive symptoms achieving limited success in treatment. In contrast, they assert that individuals that possess more perfectionistic traits respond well to treatments involving relaxation.

Turk, et al. (1996) used the psychological profiles derived from the Multidimensional Pain Inventory in an attempt to individualize treatment in accordance with symptom profile. The authors selected individuals who were classified as

dysfunctional and treated them with either a standard treatment previously found to be effective (Turk, Zaki, & Rudy, 1993) or with a cognitive treatment that specifically targeted their psychological condition. They found that the addition of the cognitive treatment had significantly greater effects on depression levels than did the standard treatment.

Etiology

Researchers have viewed contributing agents in the development of TMD as either predisposing, precipitating or perpetuating factors (Bush & Dolwick, 1995), most of which fit within the context of multi-factorial etiological models. Predisposing factors include pathophysiologic problems and anatomical irregularities. Anatomical conditions would include malocclusions (abnormal contact of the upper and lower teeth when pressed together) and misalignment of the mandible. Pathophysiologic conditions would include joint disorders, rheumatoid arthritis and muscle disorders such as hyperactivity and myospasms (Bush & Dolwick, 1995).

Precipitating factors might include both micro and macro trauma (including difficult dental procedures). Studies have revealed that trauma has been found to be the precipitating factor in 9% to 43% of persons presenting for treatment of TMD (Greene, Lerman, Sutcher, & Laskin, 1969). Extraction of teeth and other dental treatments are commonly categorized as precipitating factors, along with whiplash, and blows to the head and face.

Perpetuating factors might include both behavioral and emotional factors. Bruxism and other oral behavioral patterns have been thought to play an important role in maintaining chronic facial pain (Christensen, 1971; Laskin, 1969). TMD pain has previously been suspected as a result of oral habits contributing to condylar displacement (Toller, 1976), or more recently, to increased masseter muscular hyperactivity

(Christensen, 1981a, 1981b; Haber, Moss, Kuczmierczyk, & Garrett, 1983; Scott, 1981).

Other theorists have viewed TMD as the result of a unitary causes (Costen, 1936). The earliest theories of TMD etiology often focused on single causes of TMD, such as malocclusion, which is the improper fit between upper and lower teeth (Costen, 1936). Results of improper placement were hypothesized to be over-extension of the mandible, joint dysfunction and pain. The resulting pain was thought to be due to pressure placed on the auriculotemporal nerve (Costen, 1936). Though Costen's (1936) work provided heuristic value, later research contradicted these findings (Scott, 1981). Most theorists currently view TMD as the result of multiple factors (Laskin, 1969; Parker, 1990).

Early work by Laskin (1969) emphasized the role of masticatory muscle spasms due to over extension, hyper contraction or fatigue, in the etiology of TMD. These spasms are hypothesized to be the result of oral habits induced by stress. Stress is thought to be the first link in this chain of events resulting in facial pain. This etiological model proposes that life stress is associated with an increase in parafunctional oral habits, which result in masticatory muscle hyperactivity and consequent pain, as represented schematically in Figure 1. Laskin's (1969) seminal work has continually been refined to produce the current etiological conceptualizations (Haber, et al., 1983; Parker, 1990; Scott, 1981), although the basic components remain intact. Research examining the

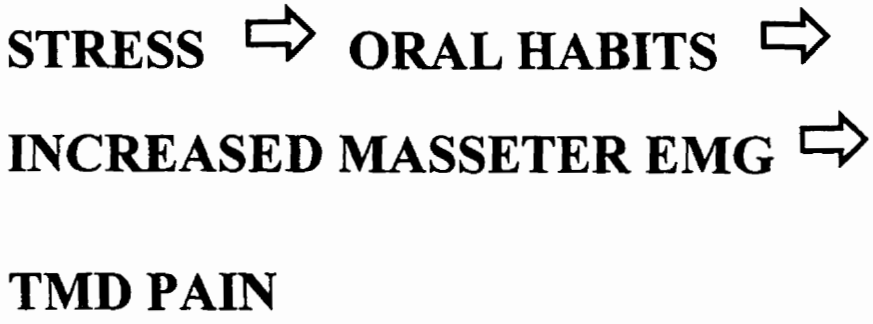

Figure 1. The hypothesized etiological relationship between stress, oral habits, muscle tension and pain as elaborated by Laskin (1969) and Haber, et al., (1983).

components primary to current conceptualizations (Laskin, 1969; Parker, 1990; Scott, 1981) has been promising and will be examined in the following sections.

Stress and TMD Pain

Stress and other emotional problems are believed to contribute both directly and indirectly, via oral behaviors, to tension in the masseter muscles which functions to produce muscular hyperactivity. This is an important component in the most current etiological theories (Parker, 1990; Scott, 1981). Although life stress is often cited as an etiological factor in facial pain, empirical research is lacking and often correlational in nature (Dworkin, Huggins, LeResche, Von Korff, Howard, Truelove, & Sommers, 1990).

Laskin's (1969) model for the maintenance of chronic facial pain was one of the first to acknowledge the role of stress, although Gessel and Alderman (1971) reported that researchers very early in this century had suggested psychogenic factors in chronic facial pain. Laskin's model, and more current conceptualizations (Haber, et al., 1983; Parker, 1990; Scott, 1981) proposed that stress, from a variety of factors, including daily hassles, and maladaptive thought patterns, functioned to increase the frequency of certain parafunctional oral behaviors such as bruxism, teeth clenching, and lip biting. Engaging in these behaviors resulted in utilization of the masseter muscles and thereby increased the activity and tension level in the muscles. Overactivity and tension are then thought to cause or exacerbate facial pain (Scott, 1981).

One method used to examine the role of stress in TMD etiology has been through retrospective studies (e.g. Marbach, Lennon, & Dohrenwend, 1988). These studies have attempted to examine the relationship between prior stressful events and the onset of

TMD pain in individuals currently symptomatic. Marbach, et al. (1988) found that individuals with TMD exhibited loss of social support and a higher frequency of illnesses and injury when compared to asymptomatic control subjects. Although this evidence, and others (Lundeen, Sturdevant, & George, 1987) allude to a relationship between stress and TMD symptoms, the correlational nature of the data does not allow us to form any concrete conclusions.

Masseter Muscle Hyperactivity

Stress Reactivity Studies

Elevated masseter muscle tension or spasms are a crucial step in the etiological model of TMD. Much of the research assessing the etiological components of TMD illustrated in Figure 1 has emphasized the relationship between stress and masseter muscle hyperactivity. Specifically, there has been a great deal of research assessing muscle activity (electromyography or EMG) in symptomatic TMD participants when exposed to experimental stressors. In this type of study, individuals with TMD are exposed to experimental stressors, which presumably mimic environmental stressors, to elicit increased masseter activity and consequent pain (Mercuri, Olson, & Laskin, 1979; Moss, Villarosa, Cooley, & Lombardo, 1987). Researchers have utilized a number of different types of experimental stressors in an attempt to produce an increased psychophysiologic response. Experimental stressors have included painful stimuli (Mercuri, et al., 1979; Thomas, Tiber, & Schireson, 1973), frustrating puzzles (Thomas, et al., 1973), word association tasks (Mercuri, et al., 1979) as well as other experimental stressors (Rao & Glaros, 1979).

Research in this area is far from conclusive however (Flor & Turk, 1989). Many studies have found increased EMG activity when symptomatic TMD subjects are exposed to experimental stressors (Kapel, Glaros, & McGlynn, 1989; Mercuri, et al., 1979; Rao & Glaros, 1979; Yemm, 1969), while others have failed to confirm this hypothesis (Gale & Carlsson, 1978; Moss & Adams, 1984; Yemm, 1976).

Non-supportive findings were revealed by Moss and Adams (1984) when they assessed EMG reactivity in 10 patients with TMJ pain compared to control groups. In an attempt to induce stress, these researchers used a buzzer to evoke a startle response, a stressful mathematical task, and a blood pressure cuff to inflict ischemic pain. For comparative purposes, two different control groups were used, one with TMJ sounds, but no pain, and a group of individuals with no history of TMD symptoms. Results failed to demonstrate differences in EMG reactivity in response to the startling stimulus, but did detect differences in the mathematical task and the pain condition for individuals with TMJ pain compared to those with TMJ sounds or nonsymptomatic individuals. Further results indicated no significant baseline differences in EMG level between individuals with TMJ pain or symptoms when compared to non-symptomatic control patients. Moss and Adams (1984) concluded that their inconsistent results could be due to several factors including, a lack to homogeneity in TMJ subjects, failure to examine EMG in associated musculature as well as the masseter muscle, and failure to assess TMJ pain patients who were currently in a state of pain.

In a critique of the literature relevant to the masseter muscle hyperactivity hypothesis, Flor and Turk (1989) commented on the abundance of methodological

shortcomings. One of the most prevalent findings in research that failed to support the idea of increased physiological reactivity to experimental stressors, was a failure to control for either individual or group differences in initial levels of physiological activity. The authors conclude that results from this literature are still equivocal in nature.

Treatments Targeting Muscle Hyperactivity

Yet a third line of evidence supporting the most prevalent theory of TMD etiology involves the success of TMD treatments that focus on reducing tension in the masseter muscles. Stam, McGrath, and Brooke (1984) compared relaxation training and hypnosis treatment of TMD pain with a non-treatment control group. Outcome measures included self-reported daily pain ratings and measures of mandibular function. Results indicated that although both treatments were more effective than the control group in reducing pain, relaxation training, targeting general muscular tension, was the most effective.

Research utilizing biofeedback techniques to directly address masseter muscle activity has been overwhelmingly supportive (Dohrmann & Laskin, 1978; Funch & Gale, 1984; Gale, 1986; Rugh & Solberg, 1975; Stam, et al., 1984). Rugh and Solberg (1975) targeted nocturnal bruxism utilizing auditory feedback to awaken clients when engaged in teeth clenching as indicated by increased EMG activity. Although results indicated decreases in nocturnal bruxism, long-term follow-up was not conducted. In a similar study, Funch and Gale (1984) found consistent results but upon follow-up discovered that individuals returned to bruxism at increased rates following treatment.

Several studies targeting masseter muscle EMG activity reported significant decreases in EMG hyperactivity and mandibular pain when compared to controls

(Dohrmann & Laskin, 1978; Gale, 1986). Turk, Meichenbaum, and Berman (1979) also examined the effects of biofeedback on reductions in EMG activity, and produced similar results in combination with additional intervention techniques.

Although numerous methodological problems plague research assessing the efficacy of biofeedback, Gale (1986) concluded that the bulk of the evidence suggests that biofeedback is effective in reducing TMD pain. Evidence linking treatment of masseter muscle hyperactivity with relaxation and reductions in TMD pain lend major support to Laskin's (1969) etiological theory. Results appear to be sound although the effect of possible intervening variables has not been fully assessed (Schwartz & Gramling, 1994).

Maladaptive Oral Habits and Masseter Pain

Although the role of the masticatory muscles in the production of TMD had been discussed in the 1950s (Schwartz, 1955), it wasn't until Laskin's (1969) influential article that oral habits were given credibility as a contributing factor in muscle hyperactivity. Since then, oral habits have been given a more pronounced role in etiological theories of TMD (Haber, et al., 1983; Parker, 1990; Scott, 1981).

Current models of TMD etiology (Laskin, 1969; Scott, 1981) assert that oral behaviors can produce muscle tension and fatigue that ultimately results in pain. Despite increased acknowledgment of the role of destructive oral habits, little empirical research has been conducted to clarify the nature of the relationship between these oral behaviors. increased muscle tension and TMD symptomotology. Moss, Ruff and Sturgis (1984) found that different oral habits predicted masticatory muscle pain in undergraduate

students with TMD symptoms. Two of the most common oral habits included lip biting and diurnal bruxism. These findings are supportive, but are limited in generalizability due to the fact that all information obtained was correlational in nature.

These findings were further supported by additional work in the same laboratory. Moss, Ruff & Sturgis (1984) examined the patterns of oral behaviors in five groups of participants, including individuals with facial pain and headaches. They found that diurnal bruxism differentiated those individuals reporting facial pain from other groups. Results supported the relationship between oral habits and facial pain in a clinical sample of individuals with facial pain, tension and migraine headaches.

Moss (1987) examined the role of oral behaviors through case studies on four individuals presenting with headaches. He concluded that most individuals (3 of 4) exhibited behaviors that produced tension in the TMJ and preceded the onset of head and facial pain. All four cases did, however, exhibit high rates of maladaptive oral habits, which when treated, resulted in significant reductions in pain for three of the four individuals. Moss (1987) concluded that it is very likely that oral habits play a role in the production of some types of head and facial pain.

Converging bodies of clinical and empirical evidence have implicated muscle hyperactivity in the maintenance and development of TMD. A second area of support for Laskin's theory involves intentional bruxing with individuals asymptomatic for TMD in laboratory settings. A program of research by Christensen (Christensen, 1971, 1981a, 1981b; Christensen & Moesman, 1967) and others (Gramling, Grayson, Sullivan, & Schwartz, 1997) utilized intentional bruxing in subjects asymptomatic for TMD to

examine the relationship with pain levels. Self-report pain measures are used during the experimental procedure and over the following days, to assess quantities and quality of pain. After varied intervals of tooth grinding, these individuals often manifest self-reported pain of intensity similar to that of TMD subjects in the temporal region, cheek and TM joint.

Different hypotheses have been generated to explain the pain produced by masseter muscle hyperactivity. Christensen and Moesmann (1967) proposed that experimental bruxing produces edema, which results in intramuscular pressure and pain. Others (Berry & Yemm, 1974) have documented temperature changes in the muscular tissue and further suggested that temperature changes were due to inflammation of tissues in the deeper muscle layers.

Several methodological problems are evident in this body of literature. One shortcoming entails the varied intensity with which individuals engage in bruxism. As bruxism is voluntary, individuals choose the intensity with which they grind their teeth, thereby introducing a large degree of variability. Additionally, intentional bruxism does not necessarily utilize the muscles most commonly implicated in TMD pain symptomotology (Flor & Turk, 1989).

Summary of Theoretical Evidence

The three bodies of evidence just elaborated provide a certain level of support for the causal model of TMD development linking stress, oral habits, increased muscular tension and facial pain (refer to Figure 1). The etiological theory advanced by Haber, et al. (1983) and based largely on Laskin's (1969) article asserts that individuals with TMD

engage in maladaptive oral habits (clenching, grinding, biting, etc.) in response to various life stressors, thereby resulting in increased masseter muscle hyperactivity and pain. These oral behaviors therefore function as a link between stressors and masseter muscle pain by producing hyperfunctioning of the masseter muscles and consequent fatigue and pain (Laskin, 1969; Parker, 1990). Treatments that have demonstrated efficacy in reducing pain in TMD patients have typically addressed one or more of the components in the etiological model outlined in Figure 1. As will be seen in the review of treatment that follows, surprisingly, little psychological research has attempted to target maladaptive oral behaviors in the treatment of facial pain.

Treatment of TMD

One of the many ways that a treatment for TMD can be categorized is as either psychological or dental/medical in nature. Treatment for TMD has been categorized in a number of different ways, including surgical versus nonsurgical, reversible versus nonreversible, and conservative versus radical (Kaplan & Assael, 1991). These classification systems are often applied interchangeably which adds to confusion when treating TMD. For the purposes of this paper, psychological and dental/medical treatment appears to be the most useful classification scheme for discussing treatment type. Some of the most widely used and/or efficacious treatments are discussed below.

Dental/Medical Treatment

Dental and medical procedures vary from conservative to radical (Kaplan & Assael, 1991). It is always recommended that treatment begin with conservative measures and then progress towards more invasive techniques as necessary (Bush & Dolwick, 1995). The most common treatment is the use of an intraoral appliance, commonly referred to as a 'bite guard'. This type of device has been demonstrated to be moderately effective in relieving pain. Studies have shown a reduction in pain symptoms from 30% to 90% after use of these appliances (Levitt, Mckinney, & Willis, 1993).

Other dental treatments have included mandibular repositioning, which adjusts an individual's bite through the use of oral appliances that repositions the teeth (Okeson, 1988). This treatment has demonstrated questionable efficacy in reducing joint sound

and pain, but the outcome is often quite variable. Additional conservative treatments include massage therapy, accupressure, face and jaw exercises, vasocoolant spray, electrical stimulation, ultrasound and many other techniques that have demonstrated a low to moderate degree of efficacy for reduction of pain (Bush & Dolwick, 1995).

About 5% of individuals seeking treatment for facial pain require more invasive surgical procedures. Surgery is often indicated for individuals with an internal derangement, osteoarthrosis, hypermobility of the joint, or condylar trauma. Efficacy of surgery is estimated at roughly 70% in reduction of pain, about 60% for reduction in locking, and clicking, and about 77% improvement in width when opening the mouth. Little empirical research has been conducted on long-term outcome for individuals opting for surgery. Most findings have been based on testimonials from patients or from the surgeon's interpretations of their patient's reports (Bush & Dolwick, 1995).

Treatment of TMD with medical and dental interventions can be costly and painful. Individuals often experience frustration with procedures that focus on occlusal adjustment. Conservative dental/medical treatments for TM pain have been shown to have beneficial effects for a large number of individuals, and are far less invasive (Clarke & Kardachi, 1977; Greene & Laskin, 1974).

Psychological Treatments

Psychologists or psychiatrists occasionally receive referrals from dentists or physicians. Rarely will a psychologist encounter an individual who has not had a thorough medical evaluation when they are referred or independently seek assistance with pain management (Kaplan & Assael, 1991). This is often due to the fact that

psychological interventions are often considered after other techniques have not been successful. This scenario is increasingly changing however, as interdisciplinary teams unite to treat chronic facial pain. Should an individual present without a complete physical examination or diagnosis, it is recommended that they be examined by a physician to ensure that facial pain and joint sounds are indeed of the TMJ variety and not an due to an alternative underlying pathology (Bush and Dolwick, 1995).

While some individuals with TMD are treated successfully with occlusal adjustments or intraoral appliances, pain still persists in many patients. Some of these individuals turn to behavioral treatments for relief (Gale, & Funch, 1984). There are numerous techniques that have been used alone or in combination to treat TMD. Each technique attempts to address different factors in the etiological model proposed by Laskin (1969). The following is a description of some of the commonly employed psychological interventions, with particular focus on two techniques that have been used for treatment of TMD, namely biofeedback and habit reversal.

Progressive Relaxation Training (PRT)

PRT has been used to reduce muscular tension in TMD and other disorders, either alone (Gessel, & Alderman, 1971; Stam, et al., 1984) or in conjunction with other treatments (Stenn, Mothersill, & Brooke, 1979). Brooke and Stenn (1983) found that relaxation training was as effective as other techniques (occlusal splint, ultrasound) both with and without biofeedback, and produced the most rapid benefits. They hypothesized that relaxation training worked through relieving muscular tension in stressful situations. Many studies (Gessel, & Alderman, 1971; Stam, et al., 1984; Stenn, et al., 1979) have

provided support for the use of PRT and relaxation as methods to effectively reduce pain symptoms in individuals with TMD (Stam, et al., 1984).

Negative Practice

The actual technique called negative practice has not been used to treat pain or muscle tension involved in TMD, but has been used to address maladaptive oral behaviors, including bruxism and teeth grinding, thought to be one of the major contributors to TMD pain. Negative practice entails combating a habit through the intense repetition of that same habit (Wolpe, 1990). Although theorists differ in the proposed mechanism of action, many consider negative practice a punishment procedure, by definition.

In one particular study, negative practice was compared to habit reversal for the treatment of destructive oral habits (Azrin, Nunn, Frantz-Renshaw, 1982). Results indicated that negative practice was not as effective as habit reversal at reducing oral habits. Individuals in the negative practice condition only reduced oral habits by 66%, while those in the habit reversal group reduced oral habits by over 90%. Caution should be used when interpreting these results, as the number of subjects in each group was extremely small (n=5).

Biofeedback

The use of biofeedback to reduce masseter muscle tension has been commonly employed since the 1970s (Carlsson, et al., 1975; Gessel, 1975; Clarke, & Kardachi, 1977), with largely positive results. Masseter muscle EMG is the most common target used with biofeedback treatment of TMD, but other muscle groups and sympathetic

nervous system components have been targeted as well. EMG biofeedback involves providing individuals with audio or visual feedback on the tension level of the masseter muscle (or other systems). Subjects are instructed to use the feedback to bring muscle activity to lower and lower levels. The exact mechanism the subject uses to control the level of tension and corresponding feedback is not clear, although relaxation has been hypothesized to be the final common pathway by which biofeedback exerts its therapeutic effects. It's this reduction in activity level of the masseter muscles that has been hypothesized to result in decreases in facial pain.

Early research using biofeedback to address muscle tension has further elaborated the nature of the relationship between muscle hyperactivity and facial pain. Research demonstrated that reducing muscle tension was effective in reducing chronic facial pain. even without addressing difficulties in bite patterns (Carlsson, et al., 1975; Gessel, 1975; Clarke, & Kardachi, 1977). Such findings introduced an alternative to early theories suggesting malocclusion was responsible for TMD pain. Stress-induced parafunctional activity was now suggested as the primary factor in theories of TMD etiology. Two conditions were hypothesized to have produced the aforementioned conclusion, the fact that biofeedback reduced bruxism and the empathetic support the therapist utilized when interacting with the client, which likely mediated stress levels (Clarke & Kardachi, 1977). In a follow-up to this research, patients with facial pain used masseter EMG biofeedback to significantly reduce tension levels in the masseter muscles, resulting in a significant decrease in pain (Dohrmann, & Laskin, 1978).

Additional research by Flor and Birbaumer (1993) compared the relative

effectiveness of three different treatments for individuals with either chronic back pain or TMD. Biofeedback was compared to both cognitive-behavioral therapy and conservative medical treatment (analgesics, physical therapy, intraoral appliances - for TMD patients or additional medical treatments). At post-treatment, improvement was noted in all treatment groups, although the biofeedback condition resulted in the most improvement. However, at follow-up, only the biofeedback condition maintained significant reductions in pain severity and additional measures of daily functioning.

Turk, et al. (1993) compared the effects of biofeedback, and supplemental stress management in three different treatment conditions for TMD. The three conditions included an occlusal appliance alone, a condition using biofeedback and stress management, and a combination of all three techniques, occlusal appliance with biofeedback and stress management. Results indicated that the appliance appeared to be as effective as the combination of biofeedback and stress management in reducing pain symptoms and depression. However, this finding was not maintained at 6 month follow-up, as neither pain measures nor depressive measures differed from pretreatment levels. Individuals in the biofeedback and stress management condition still maintained significantly improved outcome measures at 6-month follow-up, particularly on depression ratings. A program combining all three treatments, appliance, biofeedback, and stress management effectively reduced both pain and depression, at post-treatment and at follow-up (Turk, et al., 1993).

Only two studies have failed to observe beneficial effects of biofeedback in the treatment of facial pain (Moss, Wedding, & Sanders, 1986; Peck, & Kraft, 1977). One of

these studies (Moss, et al., 1986) is unique in that it is one of the few reports in the literature that used a control group. Moss, et al. (1986) assert that methodological problems abound in biofeedback research, including the exclusive use of self-report pain measures, the exclusion of other TMD symptomotology as dependent measures, and the lack of relationship between pain reduction and EMG activity reduction. Therefore, although biofeedback has largely been effective in reducing levels of facial pain, the mechanism of action has yet to be delineated.

Cognitive Modification

Cognitive interventions have become more popular as researchers have attempted to examine the role that stress plays in the oral habits-->masseter muscle hyperactivity-->pain model. Cognitive techniques have generally been included in treatment with other components, including biofeedback (Turk, et al., 1996) and relaxation training (Stam, et al., 1984). Generally cognitive techniques consist of addressing maladaptive thoughts that contribute to stress. Individuals are thought to engage in oral habits due to emotional distress which is not a result of a specific event, but due to the beliefs one has about the event (Turk, et al., 1996). Essentially, cognitive modification techniques are aimed at changing the disturbed though processes that presumably mediate the relationship between stress and oral habits depicted in Figure 1. Through cognitive techniques, people learn to disrupt these maladaptive beliefs. This reduction in psychological distress is thus thought to contribute to decreased frequency of stress induced oral habits, and therefore, decreases in self-reported pain. Although the relationship between cognitive factors and muscle tension has not been conclusively established, this is a hypothesized

mechanism of action (e.g. Turk, et al., 1996). The addition of cognitive therapy to a treatment package containing an occlusal splint, relaxation training and general information on TMD produced an effect above and beyond that of the treatment package not utilizing a cognitive component on measures of depression. The effects of this treatment addition were most dramatic on measures of depression (Turk, et al., 1996).

Multi-Component Treatments

Biofeedback has been one of the most widely used psychological interventions for the treatment of chronic facial pain (Gevirtz, Glaros, Hopper, & Schwartz, 1995). Although, with the change in focus to a multi-component etiological model there has also been some change in focus of various treatments. Researchers have been attempting to better characterize their treatment approaches in an attempt to address treatment outcomes for individuals with diverse psychological characteristics (e.g. Turk, et al., 1993; Turk, et al., 1996). Turk, et al. (1996) utilized well document treatments for TMD and elaborated criteria for the inclusion of different components to address the needs of specific types of clients. Many of the treatments discussed demonstrate effectiveness in addressing TMJ symptoms, but the combination of multiple techniques has been suggested as the most effective method of addressing specific client populations (Turk, et al., 1993). Although treatment packages have produced significant reductions in pain and psychological distress, it is impossible to identify specific components that account for therapeutic change in most of these studies.

With the goal of modifying treatment to fit the specific client profiles (psychological profiles), Turk, et al. (1996) tested the addition of cognitive therapy to a

treatment package consisting of an intraoral appliance and stress management (biofeedback) versus a treatment without cognitive therapy. This study focused on only one subgroup derived from Turk's Multidimensional Pain Inventory. Results indicated a significant reduction in pain for the group including cognitive therapy, above and beyond that of the group using the appliance and stress management alone. In addition, cognitive therapy resulted in significantly greater reductions in depression that continued at 6-month follow-up.

Turk, et al. (1996) used a multi-component treatment package and asserted that the future of TMD treatment lies in matching treatment to the particular type of client (psychological type). They concluded that TMD clients with diverse psychological characteristics respond most positively to treatments designed to address these individual differences. Although this is an admirable goal, currently we are not able to accurately predict which types of treatments work best for different types of clients, (Turk, et al., 1996, not withstanding). Moreover, many individuals with TMD do not fit neatly into classification systems, such as that derived from the Multidimensional Pain Inventory. Matching treatment to typology may be premature at this stage of development in the TMD treatment literature, since virtually all TMD treatments reviewed are multi-component to some extent and all have reported some degree of efficacy. A dismantling approach aimed at identifying the most powerful and cost-effective intervention would seem more prudent. To this aim the present study extended the work of Gramling and colleagues (Gramling, et al., 1996, 1999) examining the efficacy of habit reversal treatment for facial pain.

Habit Reversal

Habit reversal is a technique that both diminishes unwanted behaviors and simultaneously strengthens behaviors that are generally opposite, or incompatible with the undesired behaviors. Over time, these incompatible behaviors replace or effectively reverse the undesired behavior (Wolpe, 1990). Habit reversal is a behavioral treatment with utility in addressing numerous types of problem behaviors (Woods, & Miltenberger, 1995). It has been used with tics (Azrin, & Nunn, 1973), nervous motor habits (Azrin, Nunn, & Frantz, 1980; Rosenbaum, & Ayllon, 1981a), stuttering (Azrin, & Nunn, 1974) and destructive oral habits (Azrin, et al., 1982; Rosenbaum, & Ayllon, 1981b).

Steps in habit reversal. The original habit reversal procedure, as proposed by Azrin and Nunn (1973, 1974), contained nine components. The first four techniques consisted of helping the client become more aware of the habit. These included 1) having the client describe their behavior, 2) response detection, consisting of having someone point out the behavior to the client until they could reliably detect it themselves, 3) early warning where the client practiced detecting the earliest signs of the behavior, and 4) situation awareness where the client thoroughly described the situations where the behavior occurred, including where the behavior occurs, when, and with whom.

The fifth step in the procedure consisted of having the client utilize a competing response when they initially became aware of the behavior. This competing response was therefore contingent on the occurrence of the unwanted behavior. The competing response had to meet several criteria including being opposite of the nervous behavior, capable of being sustained for several minutes, and be socially inconspicuous.

Three different motivational techniques were used to increase and sustain compliance with the habit reversal treatment. The first consisted of having the client review the problems and inconvenience caused by their oral habit. The second, enlisted the aid of family members and others to praise the individual when they avoided the unwanted behavior, and remind them to use the competing response when they saw the individual engaging in the behavior. The last motivational technique was to have the client demonstrate, in public, their control over the target behavior. The final step in the habit reversal procedure was designed to increase generalization of the training. The individual was asked to imagine themselves in a variety of situations, engaging in the target behavior, then to stop the behavior and engage in the competing response.

Research has indicated that the entire habit reversal procedure is not necessary for reduction in motor tics (Miltenberger, Fuqua, & McKinley, 1985). In research attempting to determine the relative importance of the habit reversal components, Miltenberger, et al. (1985) utilized a dismantling strategy. Results indicated that the inclusion of only the awareness training component and the contingent, competing response in the treatment of motor tics resulted in equally efficacious results as did utilizing the entire habit reversal treatment.

Oral habit reversal. The habit reversal treatment has been applied to the treatment of destructive oral habits such as biting, chewing or licking of the lips, cheeks, tongue (Azrin, et al., 1982). Although participants in Azrin et al., (1982) study were not facial pain patients, this research is important nonetheless in that it successfully addressed one of the important components in the etiological model of TMD. This research

demonstrated that the abbreviated version of the habit reversal procedure was 99% effective in eliminating destructive oral habits in a small sample of individuals.

Most treatments for TMD acknowledge, to some extent, the role that parafunctional oral behaviors play in maintenance of TMD symptomotology. This acknowledgment is often manifest as 'advice' not to engage in such behaviors. Little work has been done to empirically evaluate the relationship between oral behaviors and pain during treatment of TMD pain until relatively recently (Peterson, Dixon, Talcott, & Kelleher, 1993). In studies that actually attempted to examine the role of oral behaviors in relationship to pain (e.g. teeth clenching and bruxism), the outcome measures were frequency of teeth clenching and grinding, and not pain per se (Azrin, et al., 1982). Peterson, et al. (1993) used habit reversal to address self-reported pain, TMJ noise and range of mandibular motion in a multiple baseline design with three TMD patients. Results were largely positive, with severity of pain significantly decreasing in 2 of the 3 subjects using the habit reversal technique. This study suggests that treatment include addressing oral behaviors for the reduction of facial pain. The very small sample size limits the strength of the findings however.

Oral habit reversal in group treatment designs. Gramling and colleagues (Gramling, et al., 1996; Gramling, Townsend, Grayson, Sullivan, & Neblett, 1999) utilized a habit reversal treatment package to address the different components hypothesized to be responsible for production and maintenance of TMD pain. In their first study, Gramling, et al. (1996) assessed a community sample of nine individuals who completed a habit reversal intervention presented in a small group format. Seven

qualified individuals not participating in the treatment program were used as a comparison group. The group format was utilized to maximize cost-effectiveness, and consisted of a manualized protocol emphasizing habit reversal procedures designed to increase individual's awareness of their various oral behaviors. Individuals participating in this group treatment were taught to detect, interrupt and reverse maladaptive oral habits and cognitions that were thought to be responsible for increased muscle hyperreactivity and pain. Consistent with some of the previous habit reversal literature, progressive relaxation was included in the habit reversal awareness training (Azrin & Peterson, 1988, 1990). In an attempt to maximize treatment effects cognitive change techniques were utilized as well. Based on the work of Turk and colleagues (Turk, et al., 1993; Turk, et al., 1996), the cognitive change techniques were included to increase the durability of long-term changes.

Gramling, et al. (1996) utilized a number of different self-report measures in an attempt to examine the interrelationship between various process and outcome variables hypothesized as responsible for development and maintenance of TMD (Laskin, 1969, Haber, et al., 1983; Scott, 1981). Process variables included assessment of both oral behaviors and maladaptive thought processes, as well as numerous measures of stress and pain level. Results indicated that measures of maximum and mean weekly pain ratings and number of pain free days were all significantly improved in treatment subjects when assessed against the comparison group, immediately post-treatment and at follow-up. There were no differences between treatment and comparison group in the level of maladaptive cognitions. Although non-significant, trends indicated a reduction in oral

habits among individuals in the treatment group.

In a follow-up investigation, Gramling and colleagues (Gramling, et al., 1999) used a dismantling strategy to investigate the relative contributions of habit reversal and maladaptive thought reversal assessed in their previous study (Gramling, et al., 1996). Participants received treatment in a group format that either focused on habit reversal training or thought reversal. Both treatments included relaxation training and monitoring of oral habits. Six participants in the oral habit reversal treatment and seven in the thought reversal (cognitive restructuring) intervention completed treatment.

As in their previous study, Gramling, et al. (1999) used various measures to examine both process and outcome variables. Results indicated that the habit reversal and not cognitive restructuring produced the most beneficial effects, both at post-treatment and at follow-up, on a number of outcome measures. Subjective measures of highest weekly pain rating, and mean weekly pain ratings indicated that individuals in the habit reversal treatment group had significantly lower levels of pain. Levels of maladaptive thoughts did not differ between the two treatment groups. Although measures of maladaptive oral behaviors did not differ between groups, and were therefore equivocal, these findings suggest that oral habit reversal alone is at least as efficacious as the more time consuming and therapist intensive cognitive interventions. However, the Gramling, et al. (1996, 1999) studies had difficulties with high refusal rates for qualified subjects and high attrition among participants who began treatment. Follow-up questionnaires completed by non-participants and treatment non-completers suggested that the rigid scheduling demands associated with a group format intervention precluded

the participation of many qualified subjects. Many of the subjects who qualified for the study but did not participate seemed to fit the profile described by Gessel and Alderman (1971) of perfectionistic and type A behavior patterns. This observation is anecdotal and awaits empirical validation, nevertheless, many of the non-participants and treatment non-completers reported 'scheduling difficulties' and 'not enough time' as primary reasons for failure to attend treatment sessions. Some non-completers also noted concerns regarding safety and parking problems.

Given that oral habit reversal alone seems to be an efficacious treatment for those who participate in the treatment, the challenge is to develop a format for delivering the treatment to a broader spectrum of facial pain sufferers. Thus, to extend the research program of Gramling and colleagues (1996, 1999), the present study assessed the efficacy of the oral habit reversal treatment protocol in a cost-effective, and hopefully more manageable format for participants. Specifically, in order to minimize the scheduling constraints of both individual and group treatments, the present study adapted the oral habit reversal protocol for a minimal therapist contact intervention.

Minimal Contact Therapy

In recent years there has been a noticeable shift towards time limited, cost effective treatments for different disorders that has been further encouraged by insurance companies and managed care (Blanchard, 1992). The shift towards greater efficiency and cost effectiveness has produced a number of creative solutions in an attempt to meet these difficult goals. One such solution includes using treatments that require less actual therapist time while producing similar results (Glasgow & Rosen, 1978). This category of treatments includes bibliotherapy and self-directed therapies, which can both be characterized as reduced or minimal contact therapies.

Definitions

It is often difficult to determine how different authors characterize their various brands of time/therapist limited therapy due to the variety of different names used to refer to similar procedures (Glasgow & Rosen, 1978). Some common terms used to describe limited therapeutic interventions include bibliotherapy, self-help, self-directed therapy, and minimal contact therapy.

Minimal Contact Therapy (MCT) often includes many of the procedures common to other reduced contact treatments like bibliotherapy, etc. Books and treatment manuals are a common part of a protocol for MCT (Brown & Lewinsohn, 1984). Treatment also varies to a large extent, in the degree of therapist contact.

Bibliotherapy is the use of written material to either produce changes in mood or

facilitate personality change and development (Lenkowsky, 1987). It can be viewed as an adjunct to treatment or as a treatment in and of itself (Schrank & Engels, 1981). Bibliotherapy is one form of MCT, which can often entail absolutely no therapist contact at all.

Self-help can be viewed as a subset of MCT and include procedures that provide a therapeutic program for individuals to complete (Glasgow & Rosen, 1978). The trend that began as early as the 1970s involves therapists translating their treatment strategies into manuals to be used with self-help programs. The degree of therapist direction in these programs varies widely. Glasgow and Rosen (1978) described three types of therapist contact. The first type includes self-administered self-help programs where the therapist is not involved, except for assessment purposes, and where no treatment direction is provided.

A second type of reduced contact therapy is Minimal Contact Therapy (MCT) and consists of limited therapist contact, often in the form of phone calls, mailings, and infrequent meetings. This term has been used to refer to treatments that rely mainly on treatment manuals, but where clients have some form of contact with the therapist (Glasgow & Rosen, 1979). Programs often vary in the degree to which the therapist is involved, from no contact after the first assessment, to periodic contact throughout the individual's treatment (Teders, Blanchard, Andrasik, Jurish, Neff, & Arena, 1984; Jurish, Blanchard, Andrasik, Teders, Neff, & Arena, 1983), to periodic phone contact without face-to-face contact (Gould & Clum, 1995; Brown & Lewinsohn, 1984; Jurish, et al., 1983). Although MCT often relies mostly on written material, that is not always the case.

An alternative possibility consists of shortened therapist sessions or high intensity sessions that are fewer in number or use less total time than standard treatment (Ost, Salkovskis, & Hellstrom, 1991).

The third type of therapist contact is the standard, therapist administered programs, which entail regular meetings which focus on material presented in a SH manual. Given the interrelationship and overlap that often occurs between these different treatments, bibliotherapy, SH and MCT are often used interchangeably, much to the confusion of everyone.

In the present manuscript, the term Minimal Contact Therapy (MCT) was used to refer to treatment programs that consisted of limited therapist contact in the form of phone calls, mailings, and infrequent meetings. Treatment was largely based on treatment manuals, but clients have some form of contact with the therapist in one of the forms previously mentioned (Glasgow & Rosen, 1979).

Rationale for MCT

A large body of literature has documented the popularity of MCT treatments with a broad array of disorders (Glasgow & Rosen, 1978, 1979). Rosen (1987) discussed this current trend in treatment modality and concluded that self-help treatments and bibliotherapy are becoming more popular among clinicians. There appear to be a number of different reasons that clinicians are utilizing MCT more often. The foremost rationale for the shift appears to be efficiency and cost effectiveness (Ost, et al., 1991; Jurish, et al., 1983; Teders, et al., 1984). Less time spent in face-to-face treatment translates into therapists that can see more clients at a lower cost to the individual and to insurance

companies.

Additionally, the impact of therapist contact on treatment is being examined and questioned (Frankel & Merbaum, 1982; Brown & Lewinsohn, 1984). The rationale used by Brown and Lewinsohn (1984) for utilizing MCT for depression was to examine the amount of therapist contact that appeared critical for positive outcomes. This is another reason for the increased utilization of MCT. Not only do some authors suggest that treatment effects are largely equivalent between individual and MCT, but others suggest that therapist contact is of equivocal importance in the treatment of some disorders (Pezzot-Pierce, LeBow, & Pierce, 1982). If this is indeed the case, then it is important to focus on the particular treatment modalities that result in not only the highest efficacy and maintenance, but cost-effectiveness as well (Teders, et al., 1984; Holroyd, Holm, Hursey, Penzien, Cordingley, & Theofanous, 1988).

In addition to requiring less actual therapist contact, proponents of MCT assert that it may be the solution to problems generalizing treatment from a therapeutic setting to the home environment (Jurish, et al., 1983). Proponents believe that the home environment is generally where an individual has difficulty, not in the psychologist's office. Therefore, practicing and mastering change techniques in this setting boads well for maintaining treatment gains. Others support the belief that MCT may be the most efficient method to maintain treatment effects. Blanchard, et al. (1988) state that MCT is equivalent to standard methods for maintaining treatment gains at follow-up with samples of individuals with headache. This finding suggests that valuable therapist time is not necessary to maintain treatment gains.

Treatments involving lower amounts of therapist contact are likely to appeal to individuals that are not inclined to seek treatment, like older adults (Scogin, Jamison, & Gochneaur, 1989). For these individuals, the idea of getting help for difficulties without multiple visits to a mental health or medical settings is positive. This also applies to individuals too disabled by their problems, like agoraphobia, that are currently incapable of venturing from their homes (McNamee, O'Sullivan, Lelliott, & Marks, 1989). Therefore, MCT seems to be a legitimate treatment option for attempting to reach a much larger pool of individuals (Jurish, et al., 1983; Holroyd, et al., 1988). For particular populations that lead a very active lifestyle (e.g. some individuals with behavioral health issues), the flexibility of MCT might facilitate higher levels of compliance and a lower attrition rate (Teders, et al., 1984).

Craighead, McNamara, & Horan (1984) examined research on the efficacy of self-help and bibliotherapy treatments relevant to counseling and found them to demonstrate a high degree of efficacy. Due to their strict inclusionary criteria, most of their results came from the behavioral literature. They concluded that MCT and self-help programs (including bibliotherapy) were effective in treating sexual dysfunction, problem drinking, obesity and various fears, but not with smoking cessation.

Glasgow and Rosen (1978, 1979) reviewed the utilization of self-help manuals for the treatment of different disorders, in a variety of MCT conditions. They found over 75 different SH manuals that have been published or reported in the five years prior to their article (1973-1978). The efficacy of these different manuals was quite variable. Since 1978, considerably more treatment packages have been investigated. Many of these have

been found to have considerable efficacy and researchers are now shifting their focus to examine the conditions under which various degrees of therapist supervision are most effective (Teders, et al., 1984; Holroyd, et al., 1988).

There are however, some researchers still skeptical about the efficacy of MCT procedures. Riordan and Wilson (1989) believe that it is very difficult to summarize research on the efficacy of bibliotherapy and MCT, as the diversity with which they have been used is enormous. Methodology varies, with bibliotherapy being used as an adjunct in many different studies as well as a major treatment component in others. Stevens and Pfost (1982) present a largely unfavorable picture of bibliotherapy and criticize the equivocal results in research examining its efficacy.

Uses of MCT in Clinical Psychology

The following is a summary of some of the different areas where MCT treatments have been employed in clinical psychology. It is not intended as a comprehensive review of MCT treatments but provides examples of the various uses of MCT and the efficacy of various procedures that are applicable to the current study. The review of MCT for a variety of disorders is used to illustrate several important points, in both methodological and administrative implementation of MCT procedures. MCT has been used in a variety of domains, and has faired well in comparison to more elaborate and expensive treatments. Examples include how MCT is used in each particular domain and how MCT has compared with other forms of treatment.

Anxiety Disorders

Gould, Clum, & Shapiro (1993) used a MCT treatment for persons with mild

agoraphobia. They contrasted three different treatment conditions including MCT treatment (mean time with therapist 3.0 hours), an individual therapy condition (mean 10.5 hours), and a wait-list control. In the MCT condition, clients read a book over 4 weeks that discussed how to develop their own treatment plan for agoraphobia. They were contacted during weeks 2 and 4 of treatment (two 10 minute phone conversations) to assess progress and comprehension of the material. Clients also completed homework assignments detailing the level they practiced the techniques and weekly assessment of phobia levels, which they mailed to the researchers.

Individual treatment consisted of sessions with the therapist twice per week for four weeks that followed a protocol developed from the same treatment manual that clients in the MCT received. Results indicated that both face-to-face individual therapy and MCT were more effective than the wait-list control on four of six dependent measures. MCT was as effective as individual therapy on all dependent measures and all weekly measures. The authors concluded that MCT was as effective as individual therapy and far more cost effective.

Gould and Clum (1995) compared a self-help treatment with a wait-list control condition for use in treating panic attacks. Treatment consisted of a book, a video, and audio taped sessions of progressive relaxation training. Clients were assessed and given treatment manuals to complete during the following 5 weeks of treatment. Both treatment and control subjects were instructed to mail in weekly measures of panic symptoms. Individuals in either group would receive a phone call if they did not mail in their weekly homework. Including initial assessment and any additional phone contacts,

individuals in the treatment condition averaged 3 hours of therapist contact, while the wait-list control averaged 2.5 hours. Results indicated that the self-help treatment group was significantly more improved on all dependent measures relative to the wait-list control group.

Ghosh and Marks (1987) treated individuals with agoraphobia using either a bibliotherapy treatment procedure, a computer administered treatment or an individual treatment. All groups were given information about agoraphobia and its etiology. The bibliotherapy group was given a treatment book that included self-help instructions. After 4 weeks the clients were assessed for knowledge of the book and the degree to which they had been completing the homework assignments. The individual treatment group received one-on-one therapy sessions that met weekly for 40 minutes. The computer-guided treatment used a program that suggested homework assignments for clients, and included 8- 25-minute sessions with the computer simulator. All groups kept exposure diaries. Results indicated that all groups showed a significant improvement in dependent measures, which were maintained at 3 and 6-month follow-ups. The authors state that these findings support the use of self-directed exposure for the treatment of agoraphobia.

McNamee, et al. (1989) examined a similar treatment for more severe, housebound agoraphobics. These individuals had no contact with the therapist, but were diagnosed over the telephone using the Structured Clinical Interview for the DSM-III, and mailed dependent measures. They used 2 different types of minimal contact therapy, one involving self-exposure and the other relaxation. The exposure group utilized a self-

help treatment book and was encouraged to practice exposure techniques during the week. The relaxation group was mailed audio tapes for relaxation training. Both groups received 12-minute phone calls on a weekly basis for 8 weeks and then biweekly phone calls for the next 4 weeks. Results indicated that the exposure technique was more successful than the relaxation procedure, but that there was a much higher attrition rate in the exposure group as well.

Ost, et al. (1991) treated a community sample of individuals with spider phobia using either therapist directed, single session exposure or a manualized, self-directed exposure treatment. Results indicated that therapist directed exposure had positive results on all dependent measures, as did the self-directed exposure. Therapist directed exposure, however, was significantly more effective than the self-directed program on two of the three dependent measures. The authors concluded that single session therapist directed exposure was superior and more cost effective. There were several limitations to this study however. The most important was that in the therapist directed exposure, clients not only had a lengthy exposure session but the therapist insured that the client's anxiety ratings had been reduced before leaving the situation. Also in the therapist directed condition, the mean, single session exposure time was significantly higher than in the self-directed exposure, although total exposure time was higher in the self-directed exposure condition. These appear to be key variables affecting the comparison of these two treatment modalities.

Oral Problem Behaviors

Various types of problem behaviors have been treated using MCT. Among these

are overeating, nail biting and smoking. Pezzot-Pierce, et al. (1982) used a MCT condition to further investigate the role that the therapist plays in weight loss. They compared the efficacy of four different types of groups including a therapist administered group treatment, consisting of 10 weekly sessions, an individual treatment consisting of 10 weekly sessions, a MCT treatment consisting of weekly mail contact, and a fully self-administered treatment with no therapist contact, all of which were contrasted with wait list control condition. Both the MCT and the self-administered treatment were not significantly different from the more elaborate treatments, although trends in the results favored the treatments including more therapist contact. The authors concluded that these results support the use of MCT (and other more cost-effective treatments) for weight loss.

Frankel and Merbaum (1982) believed that nail biting could be effectively treated with MCT because of the documented effectiveness of other therapist directed self-control (MCT) programs. They tested Azrin and Nunn's (1977) book on habit control under three different conditions: standard contact, minimal contact and no contact. All groups met with a therapist during the initial session to receive the treatment manual. The standard contact condition consisted of 5 weekly meetings varying from 20-30 minutes, while minimal contact consisted of 5 weekly phone calls lasting about 10 minutes each. The no contact group did not hear from the therapist between the first meeting and the end of the five-week program and therefore was 100% self-directed. Results indicated that all groups significantly improved with trends indicating more improvement in contact versus no contact groups. They concluded that MCT treatment

was a viable, cost-effective treatment alternative.

Other Disorders

Brown and Lewinsohn (1984) and Scogin, et al. (1989) both used a minimal contact procedure to treat depression. Scogin, et al. (1989) used two forms of bibliotherapy for clients that were resistant to standard treatment. Both groups received 5 minute, weekly phone calls for four weeks to answer questions and assess progress. Both studies found that MCT was effective in reducing depressive symptoms.

Several different studies have treated sexual dysfunction, both male and female using MCT (Morokoff & LoPiccolo, 1986). Results with female orgasmic disorder and premature ejaculation have been almost unanimously positive. Libman and colleagues (Libman, Fichten, Brender, Burstein, Cohen, & Binik, 1984) summarized research on behavioral sex therapy and concluded that group therapy, bibliotherapy, minimal contact and standard treatments were all equally effective.

Pain Disorders

Headaches. Teders, et al. (1984) used relaxation training and thermal biofeedback in either a therapist directed individual treatment or a MCT to treat tension headaches. All treatment components remained constant between conditions, including the use of treatment manuals and audiotapes. Both groups met during an initial session to receive the treatment rationale, their manuals (in the MCT condition) and participate in relaxation training. Clients in the MCT condition received a total of 2.5 hours of therapist contact, with an additional 20 minutes of phone time (2 phone calls at 10 minutes each) versus about 10 hours of therapist contact in the standard treatment condition. Results indicated

no significant differences between the two conditions on any outcome measures. The authors concluded that MCT was very efficient due to the reduced use of therapist time, cost effectiveness, and lower attrition rate.

Jurish, et al. (1983), used MCT for the treatment of vascular headaches. They compared a standard 16-session, therapist directed treatment to a MCT. Both treatments had similar relaxation and thermal biofeedback components. The MCT condition required three therapist visits however, and individuals used audio taped relaxation training and a manual for treatment. Individual treatment used identical tapes and manuals. MCT utilized 2 phone calls to assist with treatment. The total therapist contact time with clients in the MCT was about 3 hours versus over 16 hours in the individual treatment condition. Results indicated that MCT was as effective as the office based treatment on all treatment measures, and actually resulted in a greater percentage of clients improving (78% versus 52%) than the individual therapy. Therefore, MCT was viewed as the more efficient and cost-effective treatment for use with vascular headaches.

Holroyd, et al. (1988), and several other studies by Blanchard and colleagues have performed additional research on the use of MCT and headaches (Blanchard, Andrasik, Appelbaum, Evans, Jurish, Teders, Rodichok, & Barron, 1985; Blanchard, Appelbaum, Guarnieri, Neff, Andrasik, Jaccard, et al., 1988). Results have been uniformly in favor of the use of MCT as an alternative to intensive therapist contact.

Attanasio, Andrasik, & Blanchard (1987) compared a clinic-based treatment utilizing both relaxation and a cognitive therapy technique to two MCTs that included cognitive techniques and relaxation, and a relaxation alone treatment. The clinic based

treatment required 11 sessions while the home based cognitive and relaxation procedure consisted of five sessions and a telephone call, while the relaxation only condition required slightly less time than the combined treatment. Results of headache outcome measures indicated that there were no significant differences between the three groups.

Rowan and Andrasik (1996) summarized the use of MCT for adults with chronic headaches. They reviewed a number of studies utilizing various MCT methodologies for treatment of headaches, and evaluated their results on some of the most commonly used outcome measures, including the Weekly Headache Diary. The authors concluded that MCT has almost uniformly been demonstrated to be as effective as individual, clinic-based treatments, and superior to control or placebo conditions.

In the studies previously reviewed, the use of MCT for psychological disorders and behavioral medicine appears to be quite promising. The headache literature almost uniformly supports the use of MCT as an alternative to expensive, time consuming individual treatments (Teders, et al., 1984; Jurish, et al., 1983; Blanchard, et al., 1988; Holroyd, et al., 1988). Although the use of MCT with temporomandibular disorders is in its infancy, the components are in place to facilitate successful application.

Temporomandibular Disorders. A review of the literature suggests that MCT has not been used in the treatment of TMD to the best of our knowledge. As previously stated, the focus of many validated, manualized treatments is now shifting, in an attempt to determine which mode of administration is the most efficacious and cost effective (Teders, et al., 1984; Holroyd, et al., 1988; Blanchard, 1992). This is largely true of research on treatment of tension and vascular headaches and other health related

disorders. The treatment of chronic facial pain is another area where several different, but effective treatments have been developed (e.g. Flor & Birbaumer, 1993; Gramling, et al., 1996; Turk, et al., 1996). Gramling, et al. (1996) effectively utilized a group format to administer their manualized habit reversal treatment for TMD. Although this format is more cost-effective than individual treatment, it still consumed large amounts of therapist time, and did not cater to the needs of clients who were uneasy with the group setting, or too busy to attend weekly group meetings. Given these considerations, and the prevalence of chronic facial pain, individuals with TMD may be ideally suited for treatment administered using MCT.

MCT can be administered via a number of different modalities, including limited face-to-face sessions, telephone contact, or through the mail. Although not well documented, the use of more advanced electronic media to disseminate information, clinical care, research and administrative information is becoming much more popular (Huang & Alessi, 1996). Farrell (1997), in his summary of technology in mental health services, discussed some of the current uses of computers and interactive technology. He predicts that computer based interventions will shortly be used to reach into individual households and address larger populations, some of whom may never have considered treatment previously. Currently, managed care organizations are experimenting with methods to reduce costs through computer based medical education which can reach individuals in their own homes. The availability of clinical treatment information via electronic media is only a short step away from current uses (Huang & Alessi, 1996).

Method of Treatment Delivery

In an effort to continue with advances in treatment delivery, computers are becoming more and more commonplace in the psychological setting (Huang & Alessi, 1996). It is not uncommon for therapists to use computers for psychological assessments (e.g. Litman, 1995), diagnostic advice (e.g. Litman, 1995), administrative assistance (e.g. Bluestone, 1995), and even in the delivery of psychological services (e.g. Schneider, Schwartz, & Fast, 1995). Computers are routinely used in a variety of professional settings. There are several good articles that review the use of computers in psychological practice, and the reader is referred to these articles for a more in-depth analysis of the uses of computer technology (Binik, Cantor, Ochs, & Meana, 1997; Childress & Asamen, 1998; Gould, 1996; Wright, & Wright, 1997).

Computer technology has been used in a number of creative and innovative ways. The booming popularity of the Internet has lead psychologists to investigate methods of tapping its potential. Miller and Gergen (1998) investigated electronic bulletin boards to determine the therapeutic benefits of discussing such pertinent issues as suicide. They concluded that although bulletin boards can be a useful medium for support, it is unlikely to promote behavior change.

Many other studies have examined how computers can be used to mediate therapeutic interactions. Computer facilitated therapy has been used in several studies (Ahmed, Bayog, & Boisvert, 1997; Hirose, Kijima, Shirakawa, & Nihei, 1999). In an

overview of computer-assisted therapy, Ford (1993) discussed three variations, including programs that function as therapeutic consultants, therapeutic software that operates independently of the therapist, and on-line communication between therapist and patient. Murphy and Mitchell (1998) have even developed a program they term 'Therap-e-mail', as an Internet-based counseling service. Although their critics argue about the ethics of such a service, and its' ability to provide warmth and empathy, the authors argue that the advantages of utilizing e-mail for therapy outweigh the negatives.

E-mail is one of the technologies that has added to the speed of communication and allowed large amounts of information to travel a considerable distance in a short time. Although e-mail has revolutionized the business industry, its use for therapeutic purposes is only beginning to be developed. Although it may be common, use of e-mail in treatment delivery has often been conveyed anecdotally, and has lacked the empirical research of other treatment delivery methods. The empirical literature examining the use of e-mail in psychological practice is still relatively new (Murphy & Mitchell, 1998).

In this study, MCT was administered to a sub-sample of the participants via e-mail. The use of e-mail can speed the communication between the client and therapist, allow the exchange of written information without the two being present simultaneously, and is as convenient as sitting at your computer. This study used one of the most recent technological advances to maintain weekly contact, check client progress and provided guidance and feedback. E-mail allows both convenience and speed of information delivery.

Statement of Problem and Hypotheses

The most prominent model of TMD etiology (Laskin, 1969; Haber, et al., 1983; Parker, 1990; Scott, 1981) has suggested a multi-step process in the development, and maintenance of TMD. The individual components and their relationship are illustrated in Figure 1. Many researchers suspect that oral habits play a role in the etiology of TMD (Haber, et al., 1983; Laskin, 1969; Scott, 1981). Many of these theorists have proposed that stress functions to increase the frequency of maladaptive oral habits, resulting in an overexertion of the masseter muscles. The resulting over-activity of the masseter muscle is then thought to result in increased levels of facial pain.

Two prominent lines of research have examined the role of oral habits in the etiology and maintenance of TMJ pain. Christensen and colleagues (Christensen, 1971, 1981a, 1981b; Christensen & Moesman, 1967) have demonstrated that pain similar in intensity and location to that reported by individuals with TMD can be evoked through intentionally engaging in specific oral behaviors, namely bruxism. In addition, a program of research by Moss and colleagues (Moss, Ruff, & Sturgis, 1984; Moss, Sult, & Garrett, 1984; Moss, 1987), has continued to elaborate the possible nature of the relationship between maladaptive oral habits and different types of facial pain, including TMJ pain.

Treatment studies focusing specifically on the oral habit link in the stress-oral habit-elevated EMG-pain sequence have been lacking. Gramling and colleagues (Gramling, et al., 1996, 1999) have initiated a program of research examining the

efficacy of an oral habit reversal procedure in the treatment of facial pain participants with TMD symptomotology. These two prior studies reported successful treatment of TMD with a habit reversal intervention delivered in a group format. There were, however, several problems with these studies that resulted in difficulties interpreting results, most noticeably, high attrition. The present study sought to correct methodological problems from prior research and disseminate treatment in a more convenient and cost-effective manner.

Pain was the variable of primary importance when discussing TMD symptomotology, and therefore, the primary outcome measure. This study attempted to directly manipulate one of the components of the etiological model, oral habits, and thereby reduce pain. The role of additional factors in the etiological model, e.g. general life stress, anxiety level, etc., was assessed secondarily in an attempt to determine how reductions in maladaptive oral habits effect the links in the etiological model illustrated in Figure 1.

The literature reviewed on the use of MCT for headache and pain problems suggests that MCT has been as effective as more intensive, face-to-face therapy with those populations (Jurish, et al., 1983; Teders, et al., 1984). Although the use of MCT with TMD patients has not been documented, the development of effective treatment manuals (e.g. Gramling, et al., 1996) for use with TMD patients boads well for development of MCT procedures. In an attempt to conduct a more efficient and cost effective treatment program, the current project utilized the MCT procedures previously reviewed. In addition, to further facilitate ease of communication in the current project, a

novel form of therapist-client interaction was utilized, that being electronic mail.

To this end, the current project utilized a basic two-group design. The two groups included a MCT group and a wait-list control group which received treatment on a delayed basis, but maintained contact with the therapist and continued to complete outcome measures during this period. Assessment of select outcome measures was conducted on both groups pre- and post-treatment, during the course of treatment (for oral habits and weekly pain measures only), and during follow-up. Variables assessed during treatment were classified as primary variables and secondary variables. Primary outcome measures were those assessing the main target of the habit reversal treatment, namely oral habits and consequent self-reported pain. Secondary variables addressed the components of the etiological model hypothesized to be contributing and maintaining facial pain, including stress levels, anxiety and general psychological functioning (refer to Figure 1).

The first step in the etiological model, stress, was assessed through well-validated self-report measures, including the Hassles Scale (Kanner, Coyne, Schaefer, & Lazarus, 1981), the Brief Symptom Inventory (Derogatis & Melisaratos, 1983), and the State-Trait Anxiety Inventory (Spielberger, Gorsuch, & Lushene, 1970). The second step in the model of TMD is maladaptive oral habits. This variable was assessed via the Oral Habits Questionnaire (Moss, Ruff, & Sturgis, 1984; Moss, Sult & Garrett, 1984; Villarosa & Moss, 1985). Elevated levels of EMG activity, the third step in the model, was assessed in an assessment study run in conjunction with the treatment study, but these data were not utilized in the current study. The final step in the model, pain, was the primary

outcome measure and was assessed in two different ways. The first was through self-report of daily pain levels on the weekly pain diary (adapted from Blanchard, Andrasik, Neff, Jurish, & O'Keefe, 1981; Blanchard, Theobald, Williamson, Silver & Brown, 1978; Epstein & Abel, 1977; Fitterling, Martin, Gramling, Cole, & Milan, 1988). From this measure was derived three measures of pain, mean weekly pain rating, highest weekly pain rating, and number of pain free days. The West Haven-Yale Multidimensional Pain Inventory was another instrument that yields a measure of pain severity (Kerns, Turk & Rudy, 1985). Utilizing these design and measures, the present study sought to test a number of specific hypotheses.

Hypotheses

Primary Outcome Variables

Hypothesis #1. Although there are numerous symptoms associated with TMD, the ultimate goal of this study was a reduction in pain, since this is the leading reason an individual seeks treatment (Katz & Rugh, 1986). Individuals in the treatment group were expected to exhibit significant changes from pre- to post-treatment measures of pain using the weekly pain diary. Namely, the treatment group was expected to report decreases in mean daily pain ratings, lower maximum pain ratings, and increases in the number of pain free days experienced when compared to their own pre-treatment levels and with individuals in the wait-list control condition.

Hypothesis #2. In the etiology of TMD, oral habits have been allotted a larger role in the cause and maintenance of TMD symptoms since Laskin's (1969) seminal article. The main treatment component in this study, habit reversal, has been shown to be

effective at reducing maladaptive oral behaviors (Azrin, et al., 1982). This treatment package utilized habit reversal techniques to reduce maladaptive oral habits and presumably thereby reduce pain. Therefore, this study hypothesized that the self-reported level of oral habits will decrease from pre- to post-treatment in the MCT condition relative to controls. More specifically, we predict that following treatment, individuals in the treatment condition will endorse fewer oral habits than persons in the control condition. Participants in the treatment condition will also have a lower frequency of maladaptive oral habits than those in the control condition.

Hypothesis #3. The West Haven-Yale Multidimensional Pain Inventory (MPI) is a self-report measure of pain and its effects on an individual's daily functioning (Kerns, et al., 1985). Three subscales derived from this measure were used to assess how pain affects an individual's daily life, other's response to the pain, and limitations in functioning due to pain. With a decrease in pain, these three aspects of an individual's daily life are expected to improve. Therefore it was hypothesized that each subscale on the MPI will improve (decrease) for individuals in the treatment group relative to those in the control group.

Secondary Outcome Variables.

Hypothesis #4. A commonly used and validated measure of individual stress level is the Hassles Scale (Kanner, et al., 1981). As an effect of reducing stress levels and maladaptive oral habits, a corresponding reduction in general life stress was expected. This study predicted that following treatment there would be significant differences in both the numbers of stressful events that individuals endorse as well as the

intensity of stress from these events, when compared to individuals in the control condition.

Hypothesis #5. Several different measures were used to assess levels of general psychological functioning. The State-Trait Anxiety Inventory (STAI), frequently used in the coping literature was used to measure trait anxiety. Individuals in the treatment condition were expected to demonstrate significant decreases in STAI-trait anxiety from pre- to post-treatment, relative to participants in the wait-list control condition. In addition, the Brief Symptom Inventory (BSI) was used as a measure of general psychological functioning. The BSI (Derogatis & Melisaratos, 1983), is a broad index of psychological adjustment, which has demonstrated good reliability and validity. A subscale of the BSI, the Global Severity Index (GSI) was used as a measure of general distress and used as a measure of psychological functioning in the current study. Individuals in the treatment condition were expected to exhibit significant improvement from pre- to post-treatment when compared to individuals in the control condition.

Method

Participants

A total of 29 individuals expressed interest in participating in the facial pain treatment study. Of these, 25 individuals met the inclusionary criteria following the initial telephone screening. The remaining four individuals declined participation due to reluctance to provide the $80 deposit for the treatment (n=3), while one individual did not meet inclusionary criteria and was given a treatment manual and referred elsewhere. Participants were all Caucasian females. Although women from other ethnic groups were not excluded from treatment, none expressed interest in participation. Twenty-five individuals began in the treatment protocol while 5 of these individuals dropped out during the program, resulting in 20 women completing the entire treatment protocol. All of the women who withdrew from treatment had been assigned to the treatment condition. Four of these women discontinued the treatment program immediately after the pre-treatment assessment, prior to beginning treatment, and therefore they did not record baseline pain levels. One individual assigned to the treatment group discontinued treatment during the 3rd week of treatment due to what she reported as not being able to keep pace with the treatment exercises.

Sample Characteristics.

The twenty women who completed treatment had a mean age of 37.51 (SD= 8.80) years, and completed a mean of 14.6 (SD= 2.26) years of education, indicating that most had

some college classes, although only two were currently students. Forty-five percent (9) of the women were married, 25% (5) divorced, 20% (4) single, 5% (1) separated, and 5% (1) widowed. Of women who completed the treatment study, 25% (5) had incomes above $50,000, 10% (2) $40,000-$50,000, 20% (4) $30,000-$40,000, 15% (3) $20,000-$30,000, 25% (5) $10,000-$20,000, and 5% (1) had an income of less than $10,000. The women that did not complete the treatment study did not differ from those that completed on mean age (36.00, SD=14.45), education level, or marital status.

Individuals in both the treatment and control conditions had an extensive and idiosyncratic history of facial pain treatment. Participants used a variety of treatment techniques, including, physical therapy, hot and cold compresses, teeth filing, mandibular realignment, numerous pharmacological therapies, etc. The only common treatment across individuals was the use of intraoral appliances to prevent nocturnal bruxism. Eight of 10 individuals in the control condition used an intraoral appliance every night, while another was using it less frequently. In the treatment group, six individuals used the intraoral appliance nightly, and another less frequently. The remaining three individuals had never used an intraoral appliance for facial pain in the past.

Procedures

Recruitment

Four different sources were used for recruitment purposes. The primary method of recruitment consisted of placing advertisements in the Richmond Times-Dispatch. The Richmond Times-Dispatch is the primary print outlet in the Richmond Virginia metropolitan area. A total of four ads were placed in the paper, with one paid

advertisement placed in the Sunday Variety Section of the paper, and three free ads placed in the weekly section titled 'Health Notes' which runs on Thursdays. Ads were placed in the newspaper at four to six-month intervals, beginning in March 1997, and the final ad placed in June 1998. Please see Appendix A for a copy of this advertisement. All research participants but two were recruited via newspaper advertisements.

The second recruitment technique entailed building a web page to advertise the facial pain treatment program. This web page was linked with the VCU psychology department's home page. Individuals were able to access information about the treatment program, similar to that of the newspaper advertisement. Individuals interested in participating in this project were instructed to either phone or e-mail the author for further information and screening. See Appendix B for a copy of the basic web page design that appeared on the Internet. This method failed to generate any potential participants.

The third method entailed circulating an ad with VCU Media Resources that is directed to all VCU/MCV employees with e-mail accounts. This ad was similar to the newspaper ad and the web page and consisted of a short announcement inviting individuals with chronic facial pain to gather more information about the TMD treatment program. Individuals were instructed to contact the author at his e-mail address or office number for more information. See Appendix C for a copy of this advertisement. Although prior attempts at utilizing this method had been fruitful, the current study did not generate any responses from VCU employees.

A final strategy entailed circulating flyers on the VCU campus and in the community. Individuals with chronic facial pain were invited to contact us via telephone

or e-mail to learn more about our treatment program. This ad was the same as the one placed on the VCU/MCV e-mail system, so please refer to Appendix C for a copy. Two individuals learned about the treatment program in this manner and contacted the researchers.

Initial recruitment for this study, utilizing the four methods previously described, began February 1997 and was completed in October 1998. Due to poor recruitment results, recruitment efforts were ongoing throughout the duration of the project, and did not occur in discrete intervals as initially expected.

Initial Screening

All individuals expressing interest in this project contacted the author at the Behavioral Health Institute at Virginia Commonwealth University via one of the methods already described. Individuals were given a brief overview of the project and short description detailing the requirements for participation (e.g. need telephone or e-mail, weekly contact, treatment deposit or payment, homework assignments, etc.). Please see Appendix D for a copy of the information that potential candidates were provided. Individuals were then screened using a structured interview based on a screening measure used by Bush, Whitehall, & Martelli, (1989), assessing TMD symptomotology (see Appendix E). Individual's selected to participate in this project endorsed (via the screening questionnaire) questions related to having pain when opening one's mouth (question 1) and/or when using one's jaw (question 3) within the past 12 months. In addition, potential participants must have reported that one of the following symptoms occurred within the past 12 months: a) locked jaw, b) crepitous, or other sounds in the

jaw joint, c) tenderness in the jaw muscles, d) pain in the ears, temple or cheeks, e) discomfort when chewing or closing their mouth.

Individuals were excluded from participation if any of the following conditions were reported: a) facial pain that did not occur at a minimum of once per week, b) the individual was currently taking any sort of psychotropic medication (treatment for other psychological problems was permissible, although facial pain was the only focus of treatment), c) the individual was concurrently receiving any other type of treatment for their facial pain, with the exception of intraoral appliances (bite guard), d) anyone having received dental treatment within the two weeks prior to treatment, or anticipating major dental work during the course of treatment, e) anyone who was pregnant at the time of the study. In addition, all potential participants had to have either a telephone or access to e-mail. Exclusion criteria eliminated only one individual that did not meet the requirement for adequate facial pain.

Initial Assessment

Individuals qualifying for the treatment study were asked to participate in an initial laboratory assessment. This assessment had two portions, a questionnaire portion and a psychophysiological assessment. The psychophysiological assessment was part of a separate study being conducted at the Behavioral Health Institute and these data were not used as outcome measures. Participants were scheduled for assessment at the psychophysiology lab in room 204 of 806 West Franklin Street. They were instructed that the entire procedure would take about 2 ½ hours and following the assessment they would meet with the therapist running the program to provide more information about

treatment. Individuals received a telephone call the day prior to their appointment as a reminder. Participants were given directions to the laboratory and instructed where to park. Free parking was provided in parking facilities near the psychophysiology laboratory.

Instruments

Although pain and prevalence of oral habits were of primary importance to the researchers, several other variables were examined to assess hypothesized secondary effects that may occur as a function of participation in treatment. All instruments were administered pre- and post-treatment, with the exception of questionnaires pertaining to treatment. The Weekly Facial Pain Diary was used on a weekly basis during the course of treatment. In addition, all measures were assessed at follow-up.

Weekly Facial Pain Diary (PD). Intensity of facial pain was rated on a six point scale at four time periods during the day (generally at waking, noon, dinnertime, and before bedtime) (See Appendix F). From this information a mean pain score was calculated, which is the sum of all weekly pain ratings divided by the number of ratings. The highest pain rating during the time period (the entire week) was used as an outcome measure as were the number of pain free days during the same period (pain ratings of 0 for all four daily time periods). The names and dosages of medications used during the day were also monitored on the pain diary. This diary was adapted from a commonly used and socially validated headache pain diary (Blanchard, et al., 1981; Blanchard, et al., 1978; Epstein and Abel, 1977; Fitterling, et al., 1988).

Oral Habits Questionnaire. The oral habits questionnaire was administered prior

to treatment and immediately following treatment, as well as at follow-up (See Appendix G). This questionnaire assesses the frequency with which the person engaged in each of 20 different oral behaviors (e.g. "biting my lips;" "thrust my jaw forward or to one side", "sleeping on one's stomach", etc.). These items are rated on a 10-point Likert type scale with 1 indicating that the behavior is "never" performed and 10 indicating that it is "almost always" performed (Moss, Ruff, & Sturgis, 1984; Moss, Sult, & Garrett, 1984; Villarosa & Moss, 1985). The total number of oral habits is obtained by summing the number of questions the participant rated higher than 1 (indicating a frequency greater than 'never'). The frequency of oral habits is derived by summing each of the 20 questions that is greater than 1. Previous research has found this questionnaire to differentiate subjects with and without facial pain (Moss et al., 1984; Schwartz & Gramling, 1994).

The reliability of the Oral Habits Questionnaire was calculated in several unpublished studies in our laboratory using a sample of 103 undergraduate students. Participant's demographic data revealed that 66% of the sample were female and that 77% were Caucasian, 17% African American and 6% of other ethnic background. The mean age of the sample was about 19.2 years. Internal consistency as assessed by Chronbach's alpha yielded a score of 0.86 indicating an adequate degree of internal consistency. The 4-week test-retest reliability was 0.85.

Hassles Scale. The Hassles Scale (Kanner, et al., 1981) was developed as a means to assess unpleasant events that individuals may experience on a daily basis. The scale is composed of 117 items. Individuals are asked to indicate which events, ranging

from minor, acute problems to more chronic difficulties, they have experienced in the past month. If a stressful event has occurred in the past month, the individual then rates them on a three point Likert type scale indicating the level of distress experienced with this particular problem. A total score reliability of .84 has been reported (Kanner, et al., 1981). See Appendix H for a copy of this scale.

State-Trait Anxiety Inventory (STAI). The Trait Anxiety form of the STAI was used in this study (See Appendix H). This measure is proposed to measure the level of general anxiety that an individual feels on a daily basis. Test-retest reliability coefficients have been found to range from .65 to .86. Alpha coefficients and item remainder correlations for the instrument have also been found to be sufficiently high, and to correlate highly with other measures of anxiety (Spielberger, Gorsuch, & Lushene, 1970; Spielberger, Jacobs, Russel, & Crane, 1983).

The Brief Symptom Inventory (BSI). The BSI (Derogatis & Melisaratos, 1983), is a broad index of psychological adjustment that has demonstrated good reliability and validity. A subscale of the BSI, the Global Severity Index (GSI) is generally considered the best measure of general psychological distress and was used as a measure of psychological functioning in the current study. Please refer to Appendix H for a copy of this measure.

West Haven-Yale Multidimensional Pain Inventory (MPI). This measure is hypothesized to assesses a number of pain related phenomenon including pain severity, and is divided into three sections (See Appendix H). Section I contains 28 questions about the impact that pain has on various aspects of their life. Section II assesses how

frequently the individual's spouse/partner engages in each of 14 possible reactions to his/her pain. Section III assesses how much the individual is limited by their pain by asking how often they engage in 14 common, daily activities. Responses to all questions are based on a rating scale from 0 (e.g. never; not at all) to 6 (e.g. very intense; extreme; very often). Preliminary evidence has demonstrated that the MPI has adequate internal consistency and test-retest stability (Kerns, et al., 1985). In this study we have chosen to use scales 1-4 (Pain Severity, Interference, Life Control, and Affective Distress) as outcome measures because these scales assess the impact that pain has on an individual's life. Scales related to spouses or partners were not applicable to our sample because 50% of the sample was single, divorced, widowed or were not involved in a significant relationship at the time. The MPI does not yield a calculated scale score if items are omitted in a given category. Thus scales 5 through 8 (Support, Punishing Responses, Solicitous Responses, and Distracting Responses) were routinely omitted under these circumstances.

Treatment Expectations Questionnaire. After receiving an overview of the treatment program following the initial assessment, all group members (treatment and control groups) completed the Treatment Expectations Questionnaire (See Appendix I). This questionnaire was designed and used in prior research (Gramling, et al., 1996, 1997) to assess initial client attitudes towards treatment and the therapist, as well as assessing potential relationships between participant's expectations related to treatment and treatment success. The questionnaire consists of 9 items where clients rated how logical the treatment seemed, the probable effectiveness of the treatment for themselves and

others, etc. The client endorsed how much they agreed with a given statement, which ranges from one (not at all) to seven (extremely). All but two questions were adapted from expectations rating scales described by Borkovec and Nau (1972), Turner (Turner & Clancy, 1986; Turner and Jensen, 1993), and Nicolas, Wilson, and Goyen (1991; 1992).

Facial Pain Treatment Rating Form. Following the last treatment lesson, individuals will be asked to complete the 19-item treatment rating form (See Appendix J), which has been utilized in prior research in this laboratory (Gramling, et al., 1996, 1997). This form was developed as a measure of the client's satisfaction with the overall treatment, treatment components, and the therapist. Five questions were adapted from Turner's post-treatment questionnaire (Turner & Clancy, 1988; Turner & Jensen, 1993). Questions ask clients to rate the therapist's warmth, involvement, and knowledge, while others ask clients to rate the general effectiveness, effectiveness in reducing pain, helpfulness in improving future quality of life, and helpfulness in future pain management for each treatment component. Three questions, adapted from the Computerized Assessment System for Psychotherapy Evaluation and Research (CASPER; McCullough & Farrell, 1989), ask clients to rate their overall satisfaction with the treatment, the overall success of their treatment, and their general level of improvement since beginning treatment. Four questions ask clients to rate the role of oral habits in their facial pain, their awareness and reduction of these habits, and their ability to reduce these habits in the future. Six items simply re-state questions from the Expectations of Treatment Questionnaire, and the final question asked for participants to comment regarding additional aspects of the treatment program in a free response format.

Random Assignment

Immediately following the initial assessment, individuals were randomly assigned in blocks of two, to either the treatment condition or to the wait list control condition. Therefore, if the first individual was randomly assigned to the waitlist condition, the next individual that presented for assessment was assigned to the treatment condition. Two individuals dropped out of treatment following the initial assessment after being assigned to the treatment condition but before beginning treatment. Two other individuals dropped out of treatment condition following the initial assessment and after they had received the first treatment lesson. To compensate for treatment dropouts, the next individual presenting for assessment, regardless of the actual status of the random assignment protocol, filled the vacancy in the random group assignment left by these dropouts. Additionally, within the treatment and control groups six individuals used telephone contact and four used e-mail contact. The method of communication did not determine which group the individual was assigned, and therefore it was incidental that groups both contained an equal number of persons using telephone and e-mail for contacting the therapist.

Initial Therapist/Client Contact

The assessment and initial meeting occurred at the physiological laboratory at 806 West Franklin Street. The treatment orientation between participants and the therapist occurred immediately following the psychophysiologic assessment. Only two participants were seen at later dates for their orientation due to time constraints. This initial one-on-one meeting between the participant and therapist was similar for those in

the treatment group and those in the wait-list control group.

Following the assessment, the therapist was introduced to the participant. The therapist and participant then discussed various aspects of the treatment, including what was expected from participants, and answered any questions. An outline of this discussion is presented in Appendix K. The background and experience of the therapist, the efficacy and rationale of the treatment, and rationale for the use of MCT were also presented during this time. The therapist then answered any questions the participant had and then asked the participant to complete an Informed Consent Form. Please see Appendix L for a copy of this form.

Individuals were then given several weeks of pain diaries and instructed how to complete this measure. Participants in the treatment condition were given three pain diaries to be completed during the following three weeks as a baseline pain assessment. Individuals in the control condition were given 10 pain diaries initially, and instructed to begin recording their daily pain until such time as they could be enrolled in treatment, generally 8-10 weeks. If they ran out of pain diaries prior to their second assessment or before beginning treatment, they were given additional pain diaries.

The conditions under which the participant's treatment deposit (or for 1 individual, the $40 payment) would be returned to them were also discussed. The therapist then collected two checks from the participant, one to be returned following the 4th lesson and the other following the final assessment. For the individual that was paid for participation, it was explained that she would be paid following successful completion of the seven-lesson treatment and the post-treatment assessment. Requiring a deposit for

treatment, and paying individuals for completing a study are two methods often suggested as an attempt reduce attrition during the course of a study (Kazdin, 1992). A complete written summary of all information discussed in the initial meeting was given to each participant for their personal records. A full orientation regarding the expectations of the project is suggested to reduce attrition rates during treatment (Kazdin, 1992).

The final step was for the therapist and the participants to select a day and time to correspond either via telephone or e-mail. Individuals in both conditions selected a weekly time with the therapist during which they were most likely to be available. Despite prearranging a time for weekly communication, it was common for the therapist and participant to exchange several messages over the course of a week or two before actually speaking to one another. For those participants using e-mail, each was instructed that e-mail would be sent out at the beginning of the week, and their responsibility was to respond as soon as possible. The therapist attempted to contact each participant weekly, although on several occasions individuals could not be contacted. During the course of treatment, if there was a failure to reach the participant via e-mail, (e.g. individual does not respond to e-mail inquiries within several days), e-mail participants were contacted via telephone. Telephone contact was used until the participant was contacted. This happened on several occasions with three or four participants.

Treatment Length

The treatment used in the current study was adapted from protocols developed by Gramling and colleagues during two previous studies (Gramling, et al., 1996, 1999). The treatment consisted of seven lessons. It was possible for participants to complete one

lesson per week for seven consecutive weeks, but as the goal of treatment was to provide increased flexibility, individuals proceeded at a pace that was suited to their needs. The mean time to complete treatment was 19.94 weeks (SD = 5.78) and ranged from 9.57 to 28.71 weeks. This indicated that participants on average completed a lesson and received a new lesson every 2 to 3 weeks. Individuals having difficulty completing the lessons on a weekly basis were given additional time to complete them. All participants required extra time to complete the weekly lessons. Additional time was required for participants to notify the therapist that they had completed a lesson, and then the therapist would mail out the following lesson. Utilizing standard mail services for delivery of the new lesson added additional time to the treatment length.

Individuals in the wait-list control had a mean waiting time of 20.41 weeks (SD = 5.46) prior to starting treatment, with a range of 9.71 to 27.00. Although individuals were instructed that they would begin treatment within 8 to 10 weeks, a number of factors extended the time before starting treatment. Several individuals had difficulty scheduling the post-waiting period laboratory assessment or completing the post-treatment questionnaires. Additionally, some individuals were unreachable during the wait list period for several weeks, and then continued with pain diaries after reestablishing contact. Additionally, individuals that completed 10 weeks of pain diary information in 10 consecutive weeks were often given 3 to 4 more weeks of diaries to complete while they attempted to schedule their second assessment.

Treatment Protocol

Treatment was modeled after a protocol developed in a prior study by Gramling

and colleagues (Gramling, et al., 1996). The treatment protocol consisted of learning and implementing several different techniques, including deep breathing, progressive muscle relaxation, habit reversal training, and contingent application of competing responses. Individuals received written copies of all components, which included goals for each lesson, handouts, practice exercises, monitoring forms, etc. Please see Appendix M for a complete lesson by lesson breakdown of the habit reversal treatment for chronic facial pain.

The initial lesson presented the rationale behind the facial pain treatment program. The background and training of the therapist was explained. The role that maladaptive oral habits play in producing or exacerbating facial pain was discussed. Individuals were told about different oral behaviors that they may engage in that can cause or exacerbate their facial pain. The effects of stress on the human body were discuss, including the effects that stress have on general muscle tension. Individuals were instructed how to keep good records during the treatment, which was the first step in the habit reversal treatment. The use of inconspicuous recording methods was discussed.

During the second lesson individuals learned deep breathing techniques as a method of stress reduction. The rationale for proper breathing techniques and how breathing can induce relaxation were also discussed. Individuals were also given additional suggestions regarding record keeping in an attempt to maximize effective record keeping. Homework assignments included practicing the newly acquired deep breathing technique several times during the week. Individuals studied and recorded their own unique oral habits. They were instructed to study their oral habits as they

occurred and note particular characteristics of the behaviors. This procedure served to sensitize individuals to their own oral habits and different aspects of them.

The third lesson introduced facial exercises to reduce muscular tension. This technique utilized facial exercises in an attempt to stretch and relax hyperactive masseter muscles. These exercises are also competing response to be utilized in place of maladaptive oral habits. Individuals explored situations where maladaptive oral habits were the most likely to occur, and situations that might exacerbate their pain. Individuals were regularly reminded to complete their weekly pain diaries and weekly quizzes to mail to the therapist.

In lesson four, individuals received a relaxation audiotape to practice progressive relaxation training. The PRT technique involved clenching and releasing different groups of muscles several times and focusing on the feelings of tension and relaxation created by the procedure. They were instructed to practice the PRT approximately 3-4 times per week. This technique was used to reduce general levels of tension in the body. Furthermore, the concept of competing responses was introduced, and participants learned how to use competing responses. They developed individualized competing responses for their specific maladaptive oral behaviors (e.g. keeping ones mouth open ¼ inch instead of clenching teeth). A negative practice exercise to increase awareness of maladaptive oral habits was discussed. This technique required individuals to practice their oral habits (as elaborated in their description of oral habits they had written earlier) and focus on the sensations created when they engaged in this behavior.

The theme of competing responses was carried into lesson five, where participants

were instructed to use role-play to practice implementing competing responses in stressful situations. Participants practiced implementing competing responses in a non-stressful environment in preparation for employing these techniques within real-life settings. Individuals continued to practice all prior techniques to enhance their proficiency with the different techniques.

Facial exercises, deep breathing and other competing responses were integrated into real-life stressful situations in lesson six. Individuals were instructed to use the competing responses they had learned, and apply them when in a stressful situation during their day. Problems employing competing responses were discussed.

In the final lesson, individuals reviewed the material they have learned in the previous six lessons and were introduced to the concept of relapse prevention. The idea that the techniques discussed in the manual were skills that need to be practiced was emphasized. The manual guided participants in the development of a plan to address recurrences and exacerbations of extreme facial pain in the future. Individuals were instructed to resume facial exercises and monitoring of oral habits should they again experience and acute exacerbation of facial pain. Participants were encouraged to continue practicing the deep breathing and relaxation exercises to become more proficient in their use and application in stressful situations. Please see Appendix N to examine the treatment manual in its entirety.

Minimal Contact Therapy (MCT). The procedures used for the MCT format in this study were largely based on the procedures used by Jurish, et al., (1983) and Teders, et al., (1984). The only face-to-face contact between the researcher and the participants

was following the initial assessment, where individuals met with the therapist to receive an orientation to the treatment protocol. This meeting lasted between 30 and 40 minutes and was used to provide a treatment overview and answer questions the individual had about treatment. Between standard weekly phone or e-mail contact, individuals were instructed to contact the therapist, via telephone or e-mail, to ask any questions they might have. Only twice did a participant contact the therapist between scheduled weekly contact times. Both were to report that they were out of weekly pain diaries.

During weekly phone and e-mail contacts, the therapist informally assessed the progress participants had made on reading and understanding the material presented in the treatment manual and practice exercises. To assure that individuals read, understood and practiced the weekly exercises, participants completed a brief, 10-item assessment at the end of each lesson, which they submitted with their weekly pain diaries. A score of 70% of the questions correct was considered adequate knowledge of the material. Only one individual did not meet these criteria during one lesson. The therapist simply discussed the correct answers with her during their weekly contact time. The therapist also assisted the participants in evaluating their weekly practice goals for various exercises and reminded them to send in their weekly assessment measures.

Weekly contacts varied in length, but remained brief to the extent that the client understood the manual and did not have questions. Individuals in the treatment condition using telephone contact spoke with the therapist a mean of 35.83 minutes (SD = 11.36) during the course of treatment. Each participant received a mean of 18.17 calls (SD = 2.14) each (this included both calls attempted and calls completed), and spoke with the

therapist a mean of 8.83 (SD = 2.14) times during treatment. Mean length of each phone conversation was 4.03 minutes (SD = 0.84). Those participants in the waitlist control condition spoke with the therapist a mean of 25.83 minutes (SD = 17.67) during the waiting period. They spoke with the therapist a mean of 7.83 times (SD = 2.14) during the waiting period while the mean length of each phone conversation was 3.16 minutes (SD = 0.50).

There were no significant differences between the amount of telephone contact between the treatment and control conditions, however, the therapist attempted to contact individuals in the treatment condition (M = 18.17; SD = 2.14) significantly more often than individuals in the control condition (M = 9.83; SD = 4.49) ($t_{1,7} = 4.10$, $p = 0.002$). Please refer to Table 1 for a comparison of amount of contact between the therapist and individuals in both the treatment and waitlist control condition, via telephone and e-mail.

Individuals utilizing e-mail to communicate with the therapist had similarly brief interactions. There were no significant differences in that amount of contact between the therapist and the participant for individuals in the treatment and control conditions. Participants in the treatment group received a mean of 16.50 (SD = 4.12) e-mails from the therapist while those in the control condition received a mean of 13.00 (SD = 10.03) e-mails. The number of words per e-mail was not significantly different between the treatment and control condition. Similarly, the number of e-mails received from the participants was not significantly different regardless of whether individuals were in the treatment (M = 10.50, SD = 1.73) or the control condition (M = 9.25, SD = 4.72). The difference in mean number of words per correspondence for e-mail sent by participants

Table 1

Amount of contact between the therapist and participants in the treatment and control conditions who used telephone or e-mail.

	Treatment Group		Waitlist Control Group		t	p
	M	SD	M	SD		
Telephone Contact[1]						
Number of Attempts	18.17	2.14	9.83	4.49	4.10	.002
Number Completions	8.83	2.14	7.83	4.17	0.52	.61
Length (minutes)	4.03	.84	3.16	.50	2.15	.06
Total Phone Contact (minutes)	35.83	11.36	25.83	17.67	1.17	.27
E-mail Contact[2]						
# e-mails to Participant	16.50	4.12	13.00	10.03	0.65	.54
# Words to Participant	86.51	12.42	86.77	20.05	0.02	.98
# e-mails from Participant	10.50	1.73	9.25	4.72	0.50	.64
# Words from Participant	77.74	35.24	42.94	23.89	1.64	.15

Note: Within both the treatment and waitlist control groups, there were 6 individuals in utilizing telephone contact and 4 using e-mail contact.

[1] 6 individuals in each condition used telephone contact.

[2] 4 individuals in each condition used e-mail contact.

was not statistically significant. Please refer to Table 1 for the means, SD, t and p values for these comparisons.

Wait-List Control Condition. Following the initial physiological assessment, individuals in the wait-list control condition were told that there were only a limited number of treatment slots available currently, and that they would be placed on a wait-list and would start treatment in eight to ten weeks. These individuals participated in the same initial assessment and then met with the therapist for the treatment orientation. Procedures for the initial treatment orientation were identical for both treatment and control groups. During this meeting, individuals in the waitlist control condition also submitted their deposit to the therapist, and were given approximately ten weekly pain diaries to be completed during the interval prior to the start of treatment. Individuals in the control condition were told that the therapist would maintain weekly telephone or e-mail contact with them to monitor their condition and facilitate completing weekly pain measures during the waiting period. The participant and therapist then set a weekly time during which they corresponded. The weekly telephone and e-mail contact was used to monitor the client's condition and as a partial control for therapist attention in the MCT group. The e-mails were brief, and did not include or allude to any of the treatment techniques. The purpose of these procedures was to remain in contact with these individuals during the waiting period in an attempt to reduce attrition, reassure them that they will be provided with treatment and ensure the completion of the weekly pain diaries. After the allotted waiting period, these individuals participated in the second assessment, and were then offered the same MCT that those in the treatment condition

received. Individuals in the waitlist control condition were provided treatment by another male therapist, with similar qualifications to the primary therapist.

Treatment Fidelity

Strict adherence to treatment protocol was monitored in the following manner. Each participant received a written copy of the treatment manual and therefore, dissemination of the information did not vary. Following the completion of each lesson, individuals completed an evaluation to assess the degree to which they had read and understood the material from the assigned reading (Ghosh & Marks, 1987; Gould, et al., 1993; Quizzes are within weekly lessons, see Appendix N). If the participant failed to achieve a score of 70% on the true-false questions, they were asked to review the material again, and instructed about the correct answer by the therapist.

The initial session was the only face-to-face interaction between the therapist and client. The initial session is outlined (See Appendix K) and the therapist practiced presentation of this material. Two of the initial sessions were videotaped to facilitate assessing uniformity of presentation. Individuals in the treatment and waitlist control condition did not differ concerning their expectations for treatment, suggesting that the information presented to them was done so in a consistent manner. The total mean score on the Expectations of Treatment Questionnaire was 49.00 (SD = 8.63) for those in the treatment group, and 48.10 (SD = 11.14) for those in the control condition ($t_{1,18} = 0.20$; $p = 0.84$). More specifically, those in the treatment condition had a mean score of 5.00 (SD=1.15) on question 2 (What is the likelihood that this treatment will decrease your pain?) while control participants had a mean score of 4.90 (SD = 1.45) ($t_{1,18} = 0.17$; p =

0.87). Similarly, there were no differences in how each group viewed the therapist. Participants in the treatment group had a mean rating of 5.70 (SD=1.16) on question 7 (How knowledgeable do you feel the therapist is regarding the treatment of facial pain?) while those in the control condition had a mean rating of 6.00 (SD=0.94) ($t_{1,18} = 0.64$; $p = 0.53$).

Therapist

To maintain treatment fidelity, one therapist was used in the administration of the active treatment, which was the author. The author had participated in the administration of the treatment in a group format on two prior occasions and is thoroughly familiar with the treatment components. For those individuals in the wait-list control condition, the author maintained contact with them during the waitlist period, and then another therapist initiated treatment following completion of the second assessment. Dr. Gramling supervised the therapist during weekly meetings, while the author supervised the therapist for individuals in the control group when they began treatment. During treatment, weekly meetings were conducted to monitor client progress, and address questions the therapist had during the pervious week of treatment. General therapeutic literature suggests that therapist experience is not the key issue in client outcome, but that therapist competence is most important (Beutler, et al., 1994). As nearly all treatment components were delivered via standardized manual, telephone, or e-mail, therapist variability entered into treatment only to the degree that the client needed assistance with difficulties in treatment. Thus the use of manuals decreased variability in treatment dissemination (Hill, O'Grady, & Ellein, 1992).

Results

The information collected from individuals, including phone numbers, screening data, pre-treatment, treatment and post-treatment measures was coded to insure confidentiality. Each individual in the study was assigned a number, which was used to identify his or her assessment material and to further protect individual identity. Results are based on group statistics and not individual results to protect anonymity.

Qualified participants were randomly assigned to treatment or wait-list control conditions in an attempt to minimize initial group differences in all target variables. Although random assignment does not guarantee group equivalence, it is the most appropriate technique used in an attempt to minimize potential differences (Kazdin, 1992). However, due to the small sample size, pre-treatment variables are examined, including demographic variables (e.g. age, education), pretest Hassles intensity and frequency, pre-treatment trait anxiety and pre-treatment levels of pain to determine if any potential differences between experimental groups were present prior to treatment. Due to difficulties with data collection and management, certain measures were not administered or collected from participants in both the treatment and control conditions. Such omissions resulted in reduced sample size for certain measures. Statistics reflect the entire sample unless noted otherwise. Discrepancies in sample size are noted within the tables used to display data.

Treatment Expectations

Paired samples t-tests were used to determine possible between group differences for the Expectations of Treatment Questionnaire. There were no significant differences between the treatment and control group on any of these nine questions designed to assess initial views of treatment credibility. Please refer to Table 2 for the means, standard deviations and range for the Expectations of Treatment Questionnaire for individuals in both conditions.

Pre-treatment Comparisons

Results indicated that the control group and treatment groups did not differ significantly on demographic variables, including age, income level and marital status. To test initial group differences, independent samples t-tests were used. Results did not reveal any significant differences between conditions on mean age ($t_{df\ 1,18} = 0.88$, $p = 0.38$). The mean age for the treatment group was 35.40 ($SD = 9.49$) and 38.90 ($SD = 8.17$) for the control group. Years of education were significantly different between groups however. The treatment group had a mean of 13.60 ($SD = 2.07$) years of education and the control group had a mean of 15.6 ($SD = 2.07$) years ($t_{df\ 1,18} = 2.17$, $p = 0.04$). Chi square tests were used to determine initial differences in household income and marital status. Annual gross household income (χ^2 (4, $N = 20$) = 1.00, $p = 0.91$) and marital status (χ^2 (3, $N = 20$) = 6.80, $p = 0.08$) were not significantly different between the treatment and control groups.

Independent samples t-tests were used to determine if pre-treatment differences existed between treatment and control groups on weekly measures of pain severity.

Table 2

Means, standard deviations and range for the Treatment Expectations Questionnaire for the treatment and control condition.

	Treatment Group			Control Group		
	Mean	SD	Range	Mean	SD	Range
1. How logical does this treatment seem to you?	6.10	0.99	4 – 7	5.50	1.51	3 – 7
2. What is likelihood treatment will decrease pain?	5.00	1.15	3 – 7	4.90	1.45	2 – 7
3. What is likelihood treatment will decrease other people's pain?	5.00	1.33	3 – 7	4.80	1.40	2 – 7
4. What is likelihood treatment will improve you ability to cope with pain?	5.60	1.08	4 – 7	5.30	1.57	3 – 7
5. What is the likelihood that treatment would help most people cope with pain?	5.20	1.48	3 – 7	5.20	1.14	3 – 7
6. How confident are you that you can learn the techniques described in this treatment?	5.90	1.60	2 – 7	5.90	1.29	3 – 7
7. How knowledgeable do you believe the therapist is regarding this treatment?	5.70	1.16	4 – 7	6.00	0.94	4 – 7
8. How similar is this treatment program to what you expected?	4.90	1.37	2 – 7	5.10	1.91	1 – 7
9. How confident would you be in recommending this treatment to a friend?	5.60	0.97	4 – 7	5.40	1.58	3 – 7

Note. Items are rated on a 7-point Likert-type scale, with one indicating a lower amount of a quality and 7 indicating a high amount of a quality.

Results indicated no significant differences between the treatment and control group on pre-treatment pain measures derived from weekly pain diaries, including the number of pain free days ($t_{df1,18} = 0$, $p = 1.00$) where the treatment group had a mean of 0.47 (SD = 1.03) and the control group had a mean of 0.47 (SD = 0.77) pain free days. There were no initial differences in highest weekly pain levels ($t_{df1,18} = 0.19$, $p = 0.85$). The treatment group had a mean highest pain level of 3.40 (SD = 0.66) while the control group had a mean of 3.47 (SD = 0.88). Mean weekly pain levels were not significantly different prior to treatment ($t_{df1,18} = 0.97$, $p = 0.35$), with the treatment group having a mean of 1.79 (SD = 0.84) and the control group a mean of 2.15 (SD = 0.83). Please see Table 3 for the pre- and post-treatment Weekly Pain Diary information.

Pre-treatment number and frequency of oral habits were examined using independent samples t-tests to determine any baseline group differences in the oral habits. The number of oral habits was significantly higher for individuals in the control condition prior to treatment ($t_{df1,18} = 2.33$, $p = 0.03$). The mean number of oral habits for the treatment group was 9.50 (SD = 2.01) and 11.60 (SD = 2.01) for the control group at the initial assessment. Pre-treatment oral habits frequency was not significantly different at the 0.05 significance level ($t_{df1,18} = 1.82$, $p = 0.09$). The treatment group had an oral habits frequency of 66.75 (SD = 13.10) while the control group had a mean of 82.13 (SD = 22.89). Please refer to Table 4 for further information regarding pre- and post-treatment oral habits number and frequency.

Independent samples t-tests did not reveal significant differences between the treatment and the control group for a number of secondary variables prior to treatment.

Table 3

Mean pain level, highest weekly pain rating and number of pain free days at pre-treatment, post-treatment and follow-up.

Pain Measure	Group	Pre[1]		Post[2]		Follow-up[3]			
		M	SD	M	SD	M	SD	F	p
Mean Pain Rating	treatment	1.79	.84	.96	.57	.76	.68	16.73	.001
	control	2.15	.83	2.27	.89	-	-		
High Pain Rating	treatment	3.40	.66	2.63	.81	1.75	1.39	8.85	.008
	control	3.47	.88	3.53	.97	-	-		
Pain-Free Days	treatment	.47	1.03	1.13	1.31	2.00	3.12	12.80	.002
	control	0.47	.77	.33	.59	-	-		

Note. The F and p values represent the interaction between treatment group (treatment versus control group) and time point (pre- versus post-treatment). [1] n = 10. [2] n = 10. [3] n = 9.

Table 4

Results of repeated measures ANOVA comparing treatment versus waitlist control group for number and frequency of maladaptive oral habits on the Oral Habits Questionnaire.

Oral Habits	Group	Pre-Treatment[1]		Post-Treatment[2]		Follow-up[2]			
		M	SD	M	SD	M	SD	F	p
Number	treatment	9.50	2.01	10.89	1.97	9.11	3.33	1.64	0.22
	control	11.60	2.01	12.00	1.94	-	-		
Frequency	treatment	68.30	12.52	53.67	13.46	56.89	18.67	4.10	0.06
	control	82.00	20.20	80.67	18.11	-	-		

Note. The F and p values represent the interaction between treatment group (treatment versus control group) and time point (pre- and post-treatment).

[1] n = 10. [2] n = 9.

There were no significant pre-treatment differences on the MPI ($t_{df1,18} = 0.01$, $p = 0.99$). The treatment group had an MPI pain severity score of 38.61 (SD = 13.15) while the mean for the control group was 38.60 (SD = 13.67). Similarly, there were no significant pre-treatment differences between the treatment and control condition on Scales 2 through 4 of the MPI. A general indicator of psychological functioning, the General Severity Index of the BSI was not significantly different at the 0.05 level between the treatment and control groups prior to treatment ($t_{df1,14} = 1.93$, $p = 0.07$). The treatment group had a pre-treatment mean of 40.11 (SD = 11.48) while the control group had a mean of 45.40 (SD = 10.49). Initial levels of trait anxiety (STAI-trait) did not differ significantly between treatment and control group ($t_{df1,14} = 1.16$, $p = 0.27$), with the treatment group having a mean of 46.22 (SD = 11.71) and the control group mean of 47.89 (SD = 11.56). Please see Table 5 for a description of pre- and post-treatment means and standard deviations for these secondary variables.

Pre- and Post-treatment Comparisons

Weekly Pain Dairy

Information from Weekly Pain Diaries was examined by conducting 2 X 2 (condition: treatment vs. control; by time: pre- vs. post-treatment) repeated measures ANOVAs. To determine pre- and post-treatment pain ratings, a mean of the first and last three Weekly Pain Diaries was calculated and used for baseline and post-treatment pain ratings respectively. Pre- and post-treatment pain scores were calculated as follows. Three weeks of pre-treatment Weekly Pain Diaries were completed and collected between the initial laboratory assessment and prior to initiation of treatment. Those not

Table 5

Repeated measures ANOVAs comparing the treatment versus the control condition on pre- and post-treatment levels of secondary variables.

		Pre-		Post-		Follow-up			
	Group	M	SD	M	SD	M	SD	F	p
Pain Severity[1] (MPI)	MCT	43.70	8.95	15.94	11.34	22.40	11.46	7.98	0.01
	Control	36.17	14.26	35.51	17.61				
Interference[1] (MPI)	MCT	40.45	15.76	22.76	12.77	20.96	13.79	10.85	0.006
	Control	28.11	18.91	30.96	18.23				
Life Control[1] (MPI)	MCT	47.57	11.32	54.73	11.72	57.32	2.88	5.68	0.03
	Control	50.84	7.15	48.47	6.15				
Affective[1] Distress (MPI)	MCT	55.24	10.41	37.01	10.70	45.14	4.95	16.79	0.001
	Control	47.80	8.63	46.87	10.29				
General Severity Index (BSI)[1]	MCT	39.86	12.42	34.43	14.33	36.88	4.58	2.91	0.11
	Control	41.63	4.72	41.88	5.36				
Trait Anxiety[2] (STAI)	MCT	46.00	13.47	42.57	18.57	39.00	9.76	1.71	0.22
	Control	44.43	9.95	48.29	12.97				
Hassles[3] Frequency	MCT	52.33	35.56	33.33	26.67	34.13	22.48	3.60	0.08
	Control	41.00	15.66	39.14	18.25				
Hassles[3] Intensity	MCT	108.17	82.96	61.33	65.79	58.75	47.49	8.60	0.01
	Control	73.86	33.42	80.71	53.04				

Note: MCT = minimal contact therapy, control = waitlist control group. The F and p values are for the interaction between treatment group and time.
[1] n = 15, [2] n = 14, [3] n=13.

collected prior to treatment were collected prior to completion of lesson number one. For post-treatment pain ratings, individuals completed three weeks of pain diaries during their final week of treatment and following the completion of treatment, prior to attending the post-treatment assessment. Although individuals differed in the number of weekly pain diaries they submitted (due to different lengths of treatment), the method of calculating the pre- and post-treatment pain levels was identical for all participants. This method produced a more stable estimate of pre- and post-treatment pain levels than using fewer data points.

When reporting statistical information for analysis of variance related to primary variables, we have included F and p values, means, standard deviations and confidence intervals. In addition, the η^2 (eta squared) statistic is reported. Eta squared is a rough estimate of strength of association for analysis of variance. Strength of association is commonly referred to as effect size, and generally classified as small (.10), medium (.30) or large (.50). Eta squared reflects the proportion of variance in the dependent variable that is associated with the levels of an independent variable (Cohen & Cohen, 1983).

Results indicated that the treatment group differed significantly from the wait-list control group on all measures of weekly pain level. A significant condition by time interaction effect was noted for the dependent variable mean weekly pain level ($F_{1,18} = 16.73$; $p = 0.001$, $\eta^2 = 0.48$). The treatment group demonstrated significantly lower weekly mean levels of pain ($M = 0.96$; $SD = 0.57$, $CI = \pm 0.50$) than did control participants ($M = 2.27$; $SD = 0.89$; $CI = \pm 0.50$) following treatment. Similarly, a significant condition by time interaction was observed for highest weekly pain rating (F

$_{1,18}$ = 8.85; p = 0.008; η^2 = 0.33). The mean highest weekly pain rating for individuals in the treatment group was 2.63 (SD = 0.81; CI = ± 0.59) and 3.53 (SD = 0.97; CI = ± 0.59) for individuals in the control condition. The number of pain free days, a dependent variable derived from weekly pain diaries also exhibited a significant condition by time interaction ($F_{1,18}$ = 12.80; p = 0.002; η^2 = 0.42). Mean number of pain free days was 1.13 (SD = 1.32; CI = ± 0.68) for those in the treatment group, and a mean of 0.33 (SD = 0.59; CI = ± 0.68) for those in the control condition. Please refer to Table 3 for a comparison of the means and standard deviations for all weekly pain measures.

Oral Habits

Oral habits number and frequency were assessed during the initial assessment, approximately 4 lessons into treatment and then as part of the post-treatment assessment. A 2 X 2 repeated measures ANOVA was used to examine whether the level of oral habits changed differentially from pre- to post-treatment for the treatment versus the waitlist control group. Although not significant at the .05 level, results indicated a strong trend suggesting reductions in oral habits number ($F_{1,16}$ = 1.64; p = 0.22; η^2 = 0.09) and frequency ($F_{1,16}$ = 4.10; p = 0.06; η^2 = 0.20) for the treatment group. Mean number of oral habits at post-treatment was 10.89 (SD = 1.97; CI = ± 1.38) for the treatment group and 12.00 (SD = 1.94; CI = ± 1.38) for the control group. Mean post-treatment oral habits frequency was 53.67 (SD = 13.46; CI = ± 11.28) for individuals in the treatment condition and 80.67 (SD = 18.11; CI = ± 11.28) for those in the control condition. Please refer to Table 4 for the mean oral habits number and frequency for the treatment and control groups pre- and post-treatment as well as during follow-up.

Multidimensional Pain Inventory

Two (treatment vs. control) by 2 (pre- vs. post-treatment) repeated measures ANOVAs were conducted on scales 1 through 4 of the MPI. Scale 1, Pain Severity, exhibited a significant group by time interaction ($F_{1,13} = 7.98$; $p = 0.01$; $\eta^2 = 0.38$). The Pre-treatment mean for those in the treatment group was 43.46 ($SD = 9.78$; $CI = \pm 9.88$) and 17.57, ($SD = 11.49$; $CI = \pm 12.28$) post-treatment, while individuals in the control condition had a pre-treatment mean of 36.17 ($SD = 14.26$; $CI = \pm 12.15$) and a post-treatment mean of 35.51 ($SD = 17.61$; $CI = \pm 11.49$). On Scale 2 (Life Interference), a significant group by time interaction was also observed ($F_{1,13} = 10.85$; $p = 0.006$; $\eta^2 = 0.46$). Individuals in the treatment condition demonstrated significant reductions on Scale 2 from pre- ($M = 40.45$; $SD = 15.76$; $CI = \pm 14.31$) to post-treatment ($M = 22.76$; $SD = 12.77$; $CI = \pm 13.02$) which was not exhibited by those in the control condition. Similarly, a significant group by time interaction was observed for Scale 3, Life Control ($F_{1,13} = 5.68$; $p = 0.03$; $\eta^2 = 0.30$). Individuals in the treatment group exhibited improvements following treatment ($M = 47.57$; $SD = 11.32$; $CI = \pm 7.48$) when compared to those in the control group ($M = 48.47$; $SD = 6.15$; $CI = \pm 6.99$). Scale 4, Affective Distress, also yielded a significant group by time interaction ($F_{1,13} = 16.79$; $p = 0.001$; $\eta^2 = 0.56$). Individuals in the treatment condition exhibited significant improvements ($M = 37.01$; $SD = 10.70$; $CI = \pm 8.56$) when compared to persons in the control condition ($M = 46.87$; $SD = 10.29$; $CI = \pm 8.01$) following treatment. Please refer to Table 5 for a further description of the results from the MPI for the treatment and control group.

Other Secondary Variables

Other measures of general psychological functioning and life stress demonstrated mixed results, although a strong trend towards improvement was demonstrated for individuals following treatment. For the General Severity Index from the BSI, a non-significant group by time interaction was observed ($F_{1,13} = 2.91$; $p = 0.11$; $\eta^2 = 0.18$). A measure of daily stressors, the Hassles Intensity, revealed a significant group by time interaction ($F_{1,11} = 8.60$; $p = 0.01$; $\eta^2 = 0.44$). Hassles Frequency exhibited a non-significant group by time interaction ($F_{1,11} = 3.60$; $p = 0.08$; $\eta^2 = 0.25$). Additionally, Trait Anxiety as measured by the STAI produced a non-significant group by time interaction ($F_{1,13} = 1.71$; $p = 0.22$; $\eta^2 = 0.13$). Please refer to Table 5 for a comparison of the means, standard deviations, F and p values for both the treatment and control conditions for these measures.

Treatment Rating Form

Following treatment, individuals completed the Treatment Rating Form, which examined subjective opinions of various aspects of the treatment, including the success of the treatment and how participants viewed the therapist. Participants rated their satisfaction with treatment as roughly between 'neither satisfied nor dissatisfied' and 'satisfied' ($M = 3.40$, $SD = 1.08$), while treatment success was rated between 'somewhat successful' and 'moderately successful' ($M = 2.80$, $SD = 0.92$). When asked how they were doing in general, participants rated themselves between 'a little better' to 'moderately better' ($M = 3.80$, $SD = 1.14$). Please refer to Table 6 for a description of the questions, the means and standard deviations for those questions assessed.

Follow-up Assessment

Nine of 10 individuals who completed the treatment program also completed the follow-up assessment. Follow-up data was collected a mean of 16.3 (SD = 5.62) months following completion of treatment, with a range of 8 to 24 months post-treatment. At follow-up, reductions in weekly pain levels were uniformly maintained across all pain measures assessed, including mean weekly pain level (0.76), highest weekly pain rating (1.75), and number of pain free days per week (2.00), although improvements were not significantly better than post-treatment levels. Please refer to Table 3 for follow-up statistics for Weekly Pain Diary measures.

Improvements made in both number and frequency of maladaptive oral habits were maintained during follow-up. Sixteen months following completion of treatment, mean number of oral habits endorsed was 9.11(SD = 3.33). Improvements in oral habits frequency were also maintained at follow-up, with a mean of 56.89 (SD = 18.67), relative to 68.30 (SD = 12.52) at pre-treatment and 53.67 (SD = 13.46) following completion of treatment. Please refer to Table 4 for means and standard deviations of oral habits data collected at the 16-month follow-up.

Maintenance effects during follow-up were further observed in secondary variables including the scales from the MPI. The Pain Severity Scale from the MPI had a mean of 22.40 (SD = 11.46) at follow-up, a slight increase from the post-treatment level of 15.94 (SD = 11.34). Please refer to Table 5 for means and standard deviations of results from follow-up assessment for all secondary variables. The General Severity

Table 6

Means, standard deviations and range for items from the Treatment Rating Questionnaire.

Question	M	SD	Range
1. How would you rate your overall level of satisfaction with the treatment you received?[1]	3.40	1.08	1-5
2. How would you rate the overall success of your treatment?[2]	2.80	0.92	2-4
3. In general, how are you doing now compared to when you started treatment?[3]	3.80	1.14	2-5
4. How confident would you be in recommending this treatment to a friend that had facial pain?[4]	5.30	1.25	4-7
5. How likely is it that this treatment would decrease Most People's facial pain?[5]	4.80	0.78	4-6
6. How likely is it that this treatment would improve Most People's ability to cope with facial pain?[6]	5.20	0.92	4-7
7. How knowledgeable do you feel that the therapist was in the application of this treatment for facial pain?[7]	5.70	1.06	4-7
8. How similar is this treatment program to what you had expected?[8]	4.20	1.48	3-7
9. How likely is it that this treatment will improve your ability to cope with pain in the future?[9]	4.90	1.37	3-7
Rate the therapist on the following traits:			
Involvement[10]	5.60	1.08	4-7
Active in treatment[11]	5.30	1.06	4-7
Knowledgeable[12]	5.80	0.79	5-7

[1] Satisfaction with treatment (range = 1 to 5), 1=very dissatisfied to 5 = very satisfied.
[2] Overall success (range = 1 to 5), 1= not at all successful, 2= somewhat successful, 3= moderately successful, 4= very successful, 5= extremely successful.
[3] Comparison to when started (range = 1 to 5), 1 = worse now, 2= no change, 3= a little better, 4= moderately better, 5 = much better.
[4] Confidence in recommending treatment (range = 1 to 7), 1=not at all confident to 7 = very confident.
[5] Likelihood that treatment helps other's pain (range = 1 to 7), 1=not at all likely to 7 = very likely.
[6] Likelihood of improving most people's pain (range = 1 to 7), 1=not at all likely to 5 = very likely.
[7] How knowledgeable was the therapist at applying the treatment (range = 1 to 7), 1=not at all knowledgeable to 5 = very knowledgeable.
[8] How similar is this program to what you expected (range = 1 to 7), 1=not at all similar to 5 = very similar.
[9] How likely is it that treatment will affect coping with pain in the future (range = 1 to 7), 1=not at all likely to 5 = very likely.
[10] Therapist involvement (range = 1 to 7), 1 = cold/disinterested to 7 = warm/caring.
[11] Therapist active in treatment (range = 1 to 7), 1 = passive to 7 = actively involved.
[12] Therapist knowledgeable (range = 1 to 7), 1 = lacking knowledge to 7 = knowledgeable.

Index from the BSI, trait anxiety from the STAI, and daily hassles intensity and frequency from the Hassles Scale, all exhibited maintenance effects at follow-up.

Clinical Significance

In addition to statistical outcomes, clinical significance was assessed. The most commonly accepted measure of clinical improvement in the chronic headache literature is a 50% improvement in symptom severity (Blanchard, 1992), including number of pain free days, mean weekly pain levels and highest weekly pain levels. Seven of ten individuals (70%) in the treatment group demonstrated a clinically significant reduction in mean weekly pain levels (> 50% reduction in mean pain levels), while 60% (6 of 10) of the treatment sample demonstrated at least a 50% improvement in the number of pain free days. Participants did not demonstrate clinically significant reductions in their highest weekly pain ratings however.

Discussion

Treatment Efficacy

The goal of this study was to determine whether a group treatment previously shown to be effective for chronic facial pain could be adapted to a less restrictive administrative format and still maintain treatment efficacy. This question was answered affirmatively. As determined by the primary variable of interest, weekly pain levels, treatment was shown to be effective despite using a less intensive treatment regime. Participants demonstrated improvements uniformly across all three weekly pain measures. These results are particularly compelling when considering the small sample size. Only one of ten participants in the treatment group did not demonstrate reductions in mean weekly pain levels, indicating a nearly uniform reduction in pain levels via the MCT format.

In addition to reductions in weekly pain measures, secondary measures of pain severity and pain behavior (MPI) and daily stressors (Hassles Scale) almost uniformly reflected improvements in functioning when compared to pre-treatment levels, and individuals in the waitlist control condition. Therefore, changes in secondary measures suggest a general improvement in daily functioning, in addition to reductions in pain levels. These data would seem to support that role treatment had in the management of general stress, a hypothesized contributor to increased maladaptive oral habits.

Another important aspect of these findings includes the implications for the

etiological model of TMD. Although not statistically significant at a 95% confidence level, the current study demonstrated strong trends towards improvement in both the number and frequency of self-reported, maladaptive oral habits. Thus, these results support the suggestion that maladaptive oral habits are likely to contribute to the formation, exacerbation and maintenance of chronic facial pain, and that interventions addressing the number and frequency of oral habits are likely to result in reductions in facial pain.

Individuals in both conditions were introduced to the concept of oral habits at the treatment orientation. Each group completed several questionnaires about maladaptive oral habits before and during the treatment period. Despite being sensitized to their oral habits through numerous questionnaires during the waitlist period, persons in the control condition continued to exhibit high levels of oral habits. Although persons in the control group completed the identical sets of oral habits questionnaires, they did not achieve reductions in the number or frequency of oral habits reached by the treatment group. Therefore, it is reasonable to assert that simply assessing one's oral habits does not produce awareness, or becoming aware of maladaptive oral habits is not sufficient to produce reductions in pain. Learning how to apply contingent, incompatible behavioral responses is the key to pain reduction.

The sample examined in the current study had pain levels that were equivalent to prior samples recruited at our laboratory (Gramling, et al., 1996; 1999). Please refer to Table 7 for a comparison of pre- and post-treatment pain levels in the current sample compared to prior samples having received group treatments in our lab. Measures of pain

Table 7

A comparison of pain levels pre- and post-treatment for the current sample and two prior facial pain treatment groups (Gramling et al., 1996; 1999).

	Group	Current Study		Gramling et al., 1996		Gramling et al., 1999		
		M	SD	M	SD	M	SD	
Pre- Treatment								
Mean Pain Rating	treatment	1.79	0.84	1.64	0.25	1.85	0.25	OH+CHR
						2.00	0.38	OHR
	cont/comp	2.15	0.83	1.30	0.29			
High Pain Rating	treatment	3.40	0.66	3.11	0.35	3.57	0.46	OH+CHR
						3.42	0.17	OHR
	cont/comp	3.47	0.88	3.13	0.53			
Number of Pain-Free Days	treatment	0.47	1.03	0.33	0.71	0.07	0.07	OH+CHR
						0.83	0.77	OHR
	cont/comp	0.47	0.77	0.93	1.30			
Post- Treatment								
Mean Pain Rating	treatment	0.96	0.57	1.05	0.27	1.93	0.23	OH+CHR
						0.73	0.32	OHR
	cont/comp	2.27	0.89	1.56	0.34			
High Pain Rating	treatment	2.63	0.81	2.11	0.39	3.57	0.20	OH+CHR
						2.00	0.58	OHR
	cont/comp	3.53	0.97	3.00	0.35			
Number of Pain-Free Days	treatment	1.13	1.31	1.56	0.74	0.00	0.00	OH+CHR
						2.83	1.22	OHR
	cont/comp	0.33	0.59	0.71	0.29			

Note. The abbreviation "cont/comp" indicates control or comparison groups; OHR = oral habit reversal treatment, OH+CHR = oral habit and cognitive habit reversal treatment group.

from the weekly pain diaries used in all three studies revealed comparable levels of mean weekly pain, highest weekly pain ratings, and number of pain free days. These findings would seem to suggest that individuals recruited in the current study have levels of pain comparable in severity to those recruited in prior studies. Furthermore, results suggest that our current sample was representative of chronic facial pain patients recruited in the Richmond, Virginia area.

Since there has been no prior research conducted on the efficacy of MCT for TMJ pain, another method of comparing clinical outcomes may entail examining the current study relative to MCT for chronic headache pain. For measures of daily facial pain, our study achieved results comparable to many MCT headache studies. Rowan and Andrasik (1996) reviewed the use of MCT for treatment of chronic headaches. In their review the authors reported the mean percent improvement on weekly measures of headache pain. Studies utilizing headache diaries similar to the facial pain diaries used in the current study found comparable levels of improvement using MCT. For peak headache pain, mean levels of improvement ranged from 12% to 60% improvement with a mean of 30.4% improvement (Rowan & Andrasik, 1996). In the current study, individuals in the treatment group demonstrated a 20.8 % improvement in highest pain rating at post-treatment and a 57.5% improvement at follow-up. Improvement in the number of headache free days ranged from 38.5% to 349%, while in the current study, the number of pain free days demonstrated an improvement of 58.4% at post-treatment and 76.5% at follow-up. Rowan and Andrasik (1996) found that the headache index, a measure that is similar to mean level of daily pain, demonstrated improvements that ranged from 30.7%

to 76%, with a mean improvement of 43.8% improvement in the studies they reviewed. In our study, mean daily facial pain demonstrated an improvement of 46.4% at post-treatment and 57.5% at follow-up. When compared to other MCT used to treat chronic headaches, the current study appears to be equally effective in reducing chronic facial pain.

When comparing this project with individual studies of MCT for headache pain (Teders, et al., 1984; Blanchard, et al., 1985; Holroyd, et al., 1988), comparable results are maintained. In the current study participants began treatment with a mean of 0.47 pain free days per week, or roughly ½ of a day. Teders, et al. (1984) reported that participants in a MCT group started with a mean of 1.16 pain free days per week. Following treatment this group reported an increase to 2.24 pain free days per week, compared to 1.13 in the current study at post-treatment and 2.00 days per week at follow-up.

Similarly for weekly high pain ratings and for mean weekly pain ratings, the current study is quite comparable in terms of initial levels of pain and reductions in pain following treatment. For example, Attanasio, et al. (1987) reported a change in highest weekly pain rating for individuals in two different forms of MCT from 3.3 and 3.5 prior to treatment to 2.9 and 2.8 following treatment. These changes are comparable to reductions experienced by our treatment group from 3.40 pre-treatment to 2.63 following treatment. These comparisons suggest that a MCT procedure can affect reductions in weekly pain ratings for individuals with TMJ pain as they have for those with headache pain. Results also suggest that pain levels witnessed in this project are comparable to

pain levels seen in a several headache studies. The current data in conjunction with headache studies support the use of relaxation and behavioral interventions in a MCT format for a variety of head and facial pain conditions.

Clinical significance is another yardstick by which to measure the current study against prior research. The most commonly accepted measure of clinical improvement in the chronic headache literature is a 50% improvement in symptom severity (Blanchard, 1992). In the review by Rowan and Andrasik (1996), the percentage of individuals demonstrating 50% reduction in general headache activity was noted in the studies they reviewed. This percentage ranged from 35% - 71% of participants. In the current study, the degree of clinical improvement varied by outcome measure examined. Seventy percent of individuals demonstrated a clinically significant reduction (> 50% reduction) in mean weekly pain levels. Furthermore, 60% (6 of 10) of the sample demonstrated a significant improvement in the number of pain free days. None of the participants demonstrated a 50% reduction in their weekly highest pain ratings however. These findings suggest that most individuals were able to significantly improve the number of pain free days they experienced, and their mean weekly pain levels, but still suffered from severe, acute pain episodes, which they were able to quickly control. These findings are consistent with chronic headache literature that suggested that MCT produced significant clinical improvement as well as statistical improvement in pain symptoms.

Treatment Flexibility

Use of a MCT format illustrated a flexible approach to the treatment of chronic

facial pain. Prior experience within a group setting suggested that skill acquisition was continuously hampered by sporadic attendance, even by the most dedicated participants. Feedback from participants in prior group studies suggested that the inflexibility of scheduling the group treatment, as well as the location of the treatment were limiting factors preventing participants from attending. The group format did not facilitate remediation, and hence individuals who where unable to attend group sessions simply missed that part of the treatment protocol despite efforts to provide some written materials summarizing the previous lesson. Using a MCT format permitted individuals to review each lesson when they had time to read and practice, at a minimally structured therapeutic pace. This facilitated adaptation to the constant change individuals experienced in their daily lives. Individuals in the treatment condition took advantage of treatment flexibility and completed each lesson when their schedule permitted.

Given that mean treatment length in the MCT format was nearly twice as long as within the group context, the mechanism of acquiring treatment skills is likely to differ between groups. In a group format, numerous individuals met with the therapist and together attempted to solve problems that members may have had with particular weekly tasks. This was a dynamic process with all group members learning new ways to address problem areas. Each member was also able to share information about success that they had experienced applying techniques. In a group format the process of discussing treatment issues was an important medium for conferring information to group members. In a MCT format, individuals were able to discuss problems they encounter with the therapist, but reading the treatment manual was the primary method of conveying

information and problem solving. In the MCT format, if an individual did not mention difficulties with weekly material when asked, there was no way to be certain that they were not experiencing difficulties.

Although the therapist was able to convey effective problem solving techniques to the individual, the element of peer support is not present in the MCT format. Group members can have their experiences and struggles validated by other members. In MCT, the therapist was able to build adequate rapport with participants but it is unlikely that he was perceived as a peer.

The length of treatment was a major difference between MCT and group therapies. With a seven-week treatment group, individuals were required to read material on a weekly basis, and practice all exercises during this time frame. Should an individual fail to complete these tasks, they were required to read this material while continuing with the following week's material. Individuals that had not completed weekly material may not have caught up and therefore not read weekly assignments, or missed opportunities to practice and become proficient with weekly exercises. In a group format, following treatment, individuals were on their own to practice and continue implementing treatment techniques. In the MCT format, individuals were urged to complete lessons as quickly as possible, but were not pressured to finish. Individuals were required to send in quizzes from each lesson as an objective measure of having completed the lesson reading and exercises. This was an attempt to assure that the material was indeed read, and ideally practiced even though completing a lesson may have taken several weeks. Over the extended time period of MCT, individuals were

likely to have had more opportunities to read, review and practice treatment techniques.

Adherence to the prescribed MCT regime was not a problem in the current study. Individuals submitted quizzes following completion of a treatment lesson to ensure some level of understanding of the material. A primary concern for other researchers using MCT procedures has been treatment adherence (Attanasio, et al., 1987; Jurish, et al., 1983; Rowan & Andrasik, 1996). Prior research had required participants to complete weekly logs to demonstrate how often they had engaged in the required practice exercises. Although we used forms to log participation in relaxation and breathing exercises, participants rarely submitted them, despite being instructed to do so. Therefore, we do not know how often individuals engaged in practice exercises, but only that they had some knowledge of material to be accomplished during weekly lessons.

In the current study, we can not be certain that individuals focused more or less time reading and practicing treatment exercises than would individuals participating in a group treatment format. It may be the increased time between treatment lessons facilitated spending more time reading the treatment lessons and practicing the various exercises, and completing all the required material. The successful completion of weekly quizzes supports this assertion.

One advantage of MCT is that because the treatment was manualized, participants were able to constantly refer back to prior lessons, as the information became relevant during the weeks of treatment. Having treatment techniques at their disposal, in writing may have promoted using the manual as a reference when experiencing facial pain. This may be in contrast to a group format where individuals may not have completed their

weekly reading or practice assignments prior to weekly sessions, and hence were less able to profit from therapist supervision and discussions. In a group format similar to that conducted by our laboratory, only minimal written information on treatment techniques was available between sessions and following treatment.

In addition to the flexibility of MCT, an added benefit for clinicians and researchers was a reduction in time investment. Reduced therapist time, and therefore expense, has been cited as a major impetus for the utilization of MCT (Attanasio, et al., 1987; Jurish, et al., 1983; Lascelles, McGrath, Sullivan, & Werk, 1991; Rowan & Andrasik, 1996). Treatment of chronic facial pain in a one-on-one format is the most labor-intensive treatment available, generally requiring multiple, hour-long, weekly meetings, as well as indirect time expenditures by both the therapist and the patient. A group format is generally considered more efficient and reduces the therapist's time investment. Within the group format, weekly 90-minute sessions can still have difficulties accommodating group members, and still require considerable therapist time investment. A MCT format has been shown to be the least time intensive from both the therapist and client perspectives (Rowan & Andrasik, 1996), and is flexible enough to accommodate the schedules of all parties involved.

In the current study, the therapist spent a mean of about 2 minutes per week with patients on the telephone, (about 35 minutes of total phone contact time over 20 weeks of treatment), or roughly 1.10 e-mails per week (a mean of 27 e-mails over 20 weeks of treatment). This is unequivocally less time than with other therapy formats. Prior studies required intensive efforts by a team of 3-4 graduate students, undergraduate research

assistants and Dr. Gramling. Although the time commitment is lower than both individual and group therapy, there are unique considerations when utilizing a MCT format. One consideration is the multiple attempts that were often necessary to reach a participant. Despite having an agreed upon contact time during the week, participants were frequently not available during that time, which necessitated repeated attempts to contact them. Individuals utilizing phone contact required a mean of 18.17 attempts to contact them 8.83 times. Inability to reach participants by phone undoubtedly increased the length of treatment.

Utilizing e-mail to maintain contact with participants helped avoid some of the problems present with telephone correspondence but had problems of its own. One problem with e-mail was that even in our technological society, only 40% (8 of 20) of our sample had access to e-mail. There were two additional participants that had access to e-mail but did not use it regularly enough to facilitate communication with the therapist. A second problem was that although e-mail reached participants quickly, the rate with which individuals responded varied dramatically. It was not uncommon for a participant to take several days to respond to e-mail. The result was that the therapist was required to send multiple e-mails in an attempt to accelerate responses. This fact is reflected in the difference between the mean number of e-mails sent by the therapist (16.50) and the number sent by the participant (10.50). Additionally, it may be that e-mail is more easily ignored than repeated phone messages. Despite these limitations, it remains clear that the time investment by the therapist was clearly less extensive than that required by either group or individual treatment formats.

Treatment Satisfaction

Despite successful reduction of pain symptoms in the majority of participants, ratings of treatment success were viewed as only mildly to moderately successful. When asked how successful they believed treatment had been, participants acknowledged a mild to moderate level of treatment success, as indicated by a mean of 2.80 (SD = 0.92). Although participants acknowledged moderate improvements from previous levels (M = 3.80; SD = 1.14), overall satisfaction with the treatment was midway between 'neither satisfied nor dissatisfied' and 'satisfied' (M = 3.40; SD = 1.08). Please refer to Table 6 for the means, standard deviations and range of responses when asked about select aspects of the treatment. Prior research assessing the efficacy of MCT has rarely addressed issues of treatment satisfaction, although issues of treatment expectations, credibility, and treatment compliance are routinely addressed (Attanasio, et al., 1987; Rowan & Andrasik, 1996; Teders, et al., 1984). It appears that in the research examining MCT for treatment of chronic headaches, issues of treatment satisfaction are not regularly addressed. Subjective ratings of treatment credibility and attrition levels were viewed as tacit approval of treatment (Brown & Lewinsohn, 1984). In fact, Brown and Lewinsohn (1984) used low attrition rates and high attendance at group sessions as indirect evidence of participant satisfaction. One study examining the use of MCT for nail-biting found that participants were most satisfied with a treatment led by a therapist, versus treatment presented in an MCT format (Frankel & Merbaum, 1982). MCT was rated more highly by participants than was the control condition, however.

With little face-to-face contact between the therapist and the participant, a logical

question might include how the participants viewed their relationship with the therapist. Three questions from the Treatment Rating Questionnaire were used to assess participant's evaluations of the therapist. Questions included participant ratings of the therapist's knowledge level, whether the therapist was actively involved in therapy and whether the therapist appeared warm and caring. Results were rated on a 7-point Likert type scale, where a score of 1 endorsed less of a particular trait and 7 indicated more of the trait. Results suggested that the therapist was viewed as knowledgeable ($\underline{M}$ = 5.75; $\underline{SD}$ = 0.89), actively involved in treatment ($\underline{M}$ = 5.25; $\underline{SD}$ = 1.17), and warm and caring towards participants ($\underline{M}$ = 5.75; $\underline{SD}$ = 1.04). Please refer to Table 6 for an evaluation of the therapist and the program in general by the participants. These results suggest that the therapeutic relationship was still a positive one regardless of amount of actual face-to-face contact. The current results are supported by other studies utilizing MCT which found that amount of actual therapist contact had little relation to how therapists were viewed (Ghosh & Marks, 1987; Ghosh, et al., 1988), with therapists in both MCT and clinic-based treatments receiving high ratings.

Although research examining MCT for chronic headache patients does little to assess participant views of treatment success, studies examining MCT for use with other disorders have been more curious about participant viewpoints. Ghosh and Marks (1987) use MCT to treat agoraphobia and found that there were no differences between ratings participants gave the therapist versus those given to treatments driven by a computer or a manual. In a similar study, the therapist was rated highly regardless of how much time participants spent with the therapist (Ghosh, et al., 1988).

Retention

Retention has been acknowledged as one of the main difficulties when using MCT (Attanasio, et al., 1987; Jurish, et al., 1983; Rowan & Adnrasik, 1996). In a review of MCT for chronic headache, Rowan and Andrasik (1996) stated that retention had been a concern for many studies, but of the studies they had examined, retention rates were comparable to office-based treatments. In the MCT studies they examined, dropout rates ranged from 0 - 20% with a mean of 12.6% attrition.

One of the main forces behind the utilization of MCT in the current study was an attempt to increase treatment flexibility and thereby attempt to address problems with attrition that have caused difficulties in our prior research (Gramling, et al., 1996, 1999). Retention rates from prior studies in this lab had been lower than anticipated. When examining the number of individuals that initiated treatment and the number completing treatment, retention rates varied from 48% (Gramling, et al., 1999) to 53% (Gramling, et al., 1996). The current study had a retention rate of 91% if calculated in a similar manner, and maintained pain reductions equivalent to prior studies. Eighty percent of qualified individuals expressing interest in participating actually completed the entire program. Differences in overall retention may suggest the truly flexible nature of the current project. The added implication is that a higher percentage of persons seeking treatment are able to utilize the treatment procedure and are receiving some relief from facial pain.

Limitations

Recruitment

An unanticipated difficulty encountered in the current study was in recruiting potential participants. Prior recruitment efforts had led us to believe that recruiting 20 individuals per condition would not be problematic. The most recent group study conducted by our laboratory (Gramling, et al., 1999) yielded nearly a hundred individuals expressing interest in participating. In the current study, with only 25 persons qualified for treatment, the therapist was extremely persistent and cautious to not lose any participants through attrition.

Given the small sample size, there were serious concerns about ability to detect treatment effects. With only 10 individuals per condition, the ability to detect changes in outcome measures from pre- to post-treatment is compromised. In addition, inability to collect missing data resulted in further omission of valuable data. In the current study, the treatment effects were large enough to minimize this problem. Given the number of variables examined and the possibilities for amplified type II error, it may have been wise to utilize a more stringent alpha level. Should we have reduced the alpha to the 0.01 level, several results would have become non-significant, but the general trend would have remained notable. The consistent pattern of findings represented in this study also support the conclusions reached herein. Had a portion of the results not been consistent with the hypotheses, this would have shed increased doubt on the certainty of various results. A more strict alpha level would have been more appropriate in this situation. Regardless of significance levels and trends, it is still recommended that caution be used

when interpreting these findings in light of the small sample size.

Data Collection

An additional problem with the current study was the difficulty achieving a standard treatment length, waiting period, and follow-up intervals. Due to the busy lifestyles of participants, scheduling post-treatment assessments was extremely difficult, and two individuals did not participate in the post-treatment assessment. Difficulty collecting this information is reflected in the both the range of time taken to complete treatment (9.57 – 28.71 weeks), and the range of time required completing the follow-up assessment (8-24 months). Therefore, assessment procedures had become extremely flexible.

Length of treatment was increased for a number of reasons already alluded to. However, the number of weeks that individuals were in the waitlist control condition was artificially inflated by a number of factors, including, 1) loosing touch with several participants (3 individuals) during the course of waiting, and then regaining contact prior to the 2nd assessment. Individuals did not complete pain diaries during this entire time, but completed diaries sporadically throughout the time period. Another delay was due to difficulties scheduling the 2nd assessment, and which therefore postponed the assessment for lengthy periods of time (2 individuals). Individuals continued to complete pain diaries during this time. During the treatment, the researchers discovered that treatment was taking considerably longer than expected, and in an attempt to equate the period of recording for the two groups, researchers deliberately stretched out the recording period for other participants, after instructing them of the increased delay before starting

treatment.

Follow-up data was collected at a delayed pace as well, although this difficulty was due solely to the author. Although the original proposal recommended a follow-up of approximately 6 months, the researchers waited until the final participants had completed treatment for several months and then sent a follow-up assessment packet to the entire treatment sample. This nonstandardized approach resulted in the long and variable follow-up time frame.

Fears of high attrition rates also fueled changes in the program incentive systems. Individuals participating in the treatment program operated under two different incentive systems depending upon when they enrolled in the treatment program. Twenty participants were recruited and required to submit an $80 deposit for treatment. Although three individuals declined participation as a result of requiring a deposit, all participants received their deposit back regardless of whether they completed the program or not. The Committee on the Conduct of Human Research approved the requirement for a treatment deposit, but the researchers reconsidered this idea only a few months from completing recruitment. Participants recruited after this time were promised $40 upon completion of all portions of the treatment study. Only 4 individuals expressed interest in this reimbursement method, one of which completed the treatment.

Although a focus of this project was not on the incentive for participation, some conclusions can be drawn from this information. One is that requiring an $80 deposit did not prohibit individuals from seeking treatment. This is concluded because information about the treatment deposit was not included in the advertisement, and was only disclosed

when the individual called to express interest in the study. After being informed of the deposit, three individuals declined participation. The remaining individuals, even though they withdrew from treatment immediately, had already paid their deposit. They were under the assumption that their deposit would be forfeited if they dropped out. Additionally, one can conclude that paying individuals to participate was not a motivating factor either, as only one of four individuals that enrolled under the $40 incentive program completed treatment. In an attempt to facilitate collecting follow-up data, individuals were offered $50 to complete the follow-up assessment questionnaires and weekly pain diary. This incentive resulted in nine of ten participants completing the follow-up assessment.

Summary

In summary, MCT has been shown to be a cost-effective and efficacious alternative to both individual and group therapy for individuals with chronic facial pain. Current results are consistent with those achieved in MCT examining treatment of chronic headaches. Improvements in pain severity and general psychological functioning were also comparable to results achieved in prior studies within our own laboratory. Significant improvements in general psychological functioning and trends indicating reductions in maladaptive oral habits suggest that this treatment functions by directly targeting several areas within the etiological model of facial pain, including general stress levels and maladaptive oral habits.

In addition, e-mail has been shown to be an effective method of communicating between therapists and the clients. Given how quickly technology is being integrated into

therapeutic settings, using e-mail to conduct certain types of treatment is likely to have widespread application for the future. In this study, e-mail interactions had the advantage of being presented uniformly from participant to participant. Questions, comments, suggestions can be uniform, and thus facilitate research purposes. Participants can receive standard materials, questions and assignments. Although e-mail is easily regimented, standardized and quantifiable, it is also flexible enough to facilitate a dialogue on problem solving between the patient and the therapist. Individuals today often have e-mail at their disposal both at work and at home. Hence there is ample opportunity to respond quickly to messages sent by the therapist, and for the therapist to respond relatively quickly to problems or questions posed by the participant. Due to the small sample size, differences in the effects of treatment based on communication format could not be assessed in this study, but may be examined in the future.

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Appendix A

Ad Placed in the Richmond Times-Dispatch Newspaper

Facial Pain and Headaches

The Behavioral Health Institute at VCU is providing free treatment for women ages 18 to 55 who are suffering from chronic jaw pain, facial pain or headaches. The treatment, conducted under the supervision of Dr. Sandra Gramling, is flexible and designed for people on the go. For information, call (804) 828-1867.

Appendix B

Ad that Appeared on the Internet

Do You Have Facial Pain?

The Behavioral Health Institute at Virginia Commonwealth University is looking for individuals with chronic jaw/facial pain to participate in FREE treatment.

If you have problems with muscle aches in your jaw, pain in the jaw joint, and/or noises in the joint, our treatment may be just what you need. Dr. Sandy Gramling, Director of the Behavioral Health Institute, has been treating individuals with chronic facial pain for over 15 years. Treatment entails an examination to determine muscle hyperactivity, and several assessment measures to determine stress level. Because we know that you are very busy, and weekly appointments can be restrictive, we've modified our very successful treatment to fit into your busy schedule. We only ask that you come to our clinic for two visits, before you start treatment and after you finish treatment. The remainder of the treatment is administered through a treatment manual that you read and practice. Our therapists are in contact with you on a weekly basis, through e-mail, to answer questions and monitor your progress through the treatment program. Treatment will cost you nothing, we only ask that you put up a small deposit, which is fully refunded upon completion of the treatment. In addition, we ask that you complete some questionnaires for us to assess your pain levels and progress in the treatment program.

For more information Contact either Dr. Sandy Gramling at sgramlin@atlas.vcu.edu or (804) 828-8795 or Don Townsend, M.A. at psy4drt@atlas.vcu.edu or (804) 828-1867.

Appendix C

Ad for MCV/VCU E-mail Systems and Used for Flyers

Do You Have Facial Pain?

The Behavioral Health Institute at Virginia Commonwealth University is looking for individuals with chronic jaw/facial pain to participate in **FREE** treatment.

If you have problems with muscle aches in your jaw, pain in the jaw joint, and/or noises in the joint, our treatment may be just what you need.

Dr. Sandy Gramling, Director of the Behavioral Health Institute,
has been treating individuals with chronic facial pain for over 15 years. Treatment entails an examination to determine muscle hyperactivity, and several assessment measures to determine stress level. Because we know that you are very busy, and weekly appointments can be restrictive, we've modified our very successful treatment to fit into your busy schedule. We only ask that you come to our clinic for two visits, before you start treatment and after you finish treatment. The remainder of the treatment is administered through a treatment manual that you read and practice. Our therapists are in contact with you on a weekly basis, through e-mail, to answer questions and monitor your progress through the treatment program. Treatment will cost you nothing, we only ask that you put up a small deposit, which is fully refunded upon completion of the treatment. In addition, we ask that you complete some questionnaires for us to assess your pain levels and progress in the treatment program.
For more information Contact either Dr. Sandy Gramling at sgramlin@atlas.vcu.edu or (804) 828-8795 or Don Townsend, M.A. at psy4drt@atlas.vcu.edu or (804) 828-1867

Appendix D

Project Overview/Recruitment Script

Hi, I'm _____ from the Behavioral Health Institute and I'm calling to give you some more information about the facial pain treatment group that you expressed interest in, and to ask you some questions to determine if our program is likely to be effective for treating your facial pain. The facial pain treatment program is a home based treatment program consisting of 7 weekly lessons. Dr. Sandy Gramling has developed this treatment program to treat individuals with chronic facial pain. The treatment program has been shown to be effective in reducing many types of chronic facial pain. Individuals will be assigned to one of two different groups. Two advanced graduate students, specializing in the treatment of chronic pain, will be supervising the lessons and will be supervised closely by Dr. Sandy Gramling. Dr. Gramling has worked with facial pain patients for 15 years conducting both individual and group treatment for facial pain and stress management. She has also served as a consultant for the Richmond Headache Clinic and other pain management facilities.

Treatment itself entails teaching individuals to reduce the level of tension in the jaw joint and surrounding muscles, and includes facial muscle exercises and other interventions designed to reduce muscle tension.

The researchers involved in this project are attempting to determine more about the management of facial pain and therefore we ask that individuals complete some questionnaires to give us more information. Only two visits to the VCU campus are required, one before treatment begins and one at the conclusion of treatment. Because of the time required to complete paperwork and visit the campus for assessment, the researchers have decided to offer this treatment to qualified individuals free of charge. However, a small deposit of $80 is required, and will be fully refunded at the completion of treatment. The two office visits will involve assessing muscle activity in the laboratory by using electrodes attached to your jaw area. No painful or invasive procedures are used.

Are there any questions I can answer for you?

I need to ask some questions to determine if our treatment program is likely to benefit you.

COMPLETE TMD SCREENING FORM NOW.

NO....I'm sorry, but it looks as though our treatment is not appropriate for someone with your symptoms. We do have an individual treatment program for facial pain run through the Center for Psychological Services and Development here at VCU. The cost is minimal (ranging from $5-$20 per session) and would entail meeting one-on-one with one of the therapist running the current groups.

YES.... You seem to qualify for this type of treatment based on this initial screening. We would like to send you some more information about our treatment program and some questionnaires we need to collect information for our project. You can take your time completing these forms but we would like you to bring them with you when you come in to our offices for the physiological assessment portion of the project.

One of the questionnaires that we will be sending asks you to estimate your facial pain during the previous month (July) on a scale ranging from 0 (no pain) to 5 (severe, incapacitating pain). Another form asks you to rate your pain during the week immediately before coming in to treatment. You will use the same scale, 0-5, but will estimate the pain at 4 different time points during the day. Do you have any questions?

You can expect a call during the next week or two from someone who will be trying to schedule an appointment with you to participate in the psychophysiological portion of our assessment. Bring all your forms to this session.

Do you have any questions?

Appendix E

Screening Questionnaire

Subject #_____ Date_____

Name: _____ Sex: _____
Address: _____ Race: _____
_____ Age: _____
Phone #: _____ e-mail: _____

1. Have you had difficulty or pain, or both, when opening your mouth as for instance when yawning in the last 12 months?
   YES NO

2. Has your jaw gotten 'stuck', 'locked' or otherwise 'gone out' in the last 12 months?

   YES NO

3. Do you have difficulty or pain, or both when chewing, talking, or using your jaw in the last 12 months?
   YES NO

   3a. Is there tenderness in the joint? YES NO

   3b. Is there tenderness in the jaw muscle? YES NO

4. Does you jaw joint ever make a 'popping', 'clicking' or 'grinding' noise when chewing, talking or using your jaw?
   YES NO

5. Is there tenderness, weakness or fatigue in your jaw?

   YES NO

6. Have you had pain in or about the ears, temple or cheeks in the last 12 months?

   YES NO

7. Does your bite feel uncomfortable or unusual?

   YES NO

8. Please answer the following questions about the nature of your pain:
   a). When did you last experience this pain? _____
   b). How frequent is the pain? _____
   c). Does the pain occur on the right or left side of your face? _____
   d). How long have you had the pain? _____
   e). Does the pain interfere with eating, chewing or swallowing? _____
   f). Does the pain limit how wide you can open your mouth? _____
   g). Does the pain limit your ability to move your jaw from side to side? _____

8. Do you have frequent headaches?
   YES NO
   a). Which of the following best describes the nature of your headaches.
   TENSION MIGRAINE SINUS OTHER _____

9. Have you ever experienced any other persistent pain problem?

   YES NO a). If yes briefly explain: _____

10. Have you ever had an injury to your head, neck or jaw?
    YES NO a) If yes briefly describe: _____

11. Have you ever been diagnosed with arthritis or other painful disorder of the joint?
    YES NO

12. Have you previously been treated for a jaw problem?
    YES NO

    a). In the last 12 months? YES NO

13. Are you currently taking any prescription medication?

    YES NO a). If yes what type? _____

14. Do you suffer with any neuromuscular or degenerative joint disease?
    YES NO

15. Have you ever been treated for a psychological problem?
    YES NO

    a). If yes what diagnosis were you given (if any)? _____

16. Are you currently pregnant?
    YES NO

17. Have you had any dental work done in the last two weeks?
    YES NO

Appendix F

Weekly Facial Pain Diary

We would like you to rate the intensity of your facial pain four times a day using the structured diary below. Please use the following scale to rate the intensity of your facial pain during each time period.

0 = no facial pain
1 = only aware of facial pain when attention is devoted to it
2 = mild facial pain, could be ignored at times
3 = facial pain is painful, but can still do my job/go to classes, etc.
4 = very severe facial pain, difficult to concentrate, can only do undemanding tasks
5 = intense, incapacitating facial pain

Time of Day	Monday _____ (date)	Tuesday _____ (date)	Wednesday _____ (date)	Thursday _____ (date)	Friday _____ (date)	Saturday _____ (date)	Sunday _____ (date)
Awake-11:00am							
11:00am-3:00pm							
3:00pm-7:00pm							
7:00pm-bedtime							

Medications: Each time you rate your facial pain also indicate any medicine you took since the last rating. Include the name and amount of the medicine. You can make your own table of abbreviations and dosages to make filling in the chart easier.

For example:

__T__ = __Tylenol (regular strength- 500mg)__
_____ = _____
_____ = _____
_____ = _____

Appendix G

Oral Habits Questionnaire

Listed below are a number of behaviors involving the mouth, the lower part of the face, and various motor habits that people sometimes engage in to varying degrees. This helps us understand more about what types of behavior **you** engage in.

Please answer the following questions by circling the number that best indicates the degree to which you engage in the specified behavior.

	Never								Almost Always
1. I clench my teeth.....	1	2	3	4	5	6	7	8	9	10
2. I smoke a pipe.....	1	2	3	4	5	6	7	8	9	10
3. I bite my lips.....	1	2	3	4	5	6	7	8	9	10
4. I chew gum.....	1	2	3	4	5	6	7	8	9	10
5. I play a musical instrument that requires extensive use of my lips or chin..	1	2	3	4	5	6	7	8	9	10
6. I hold the telephone receiver between my chin and shoulder.....	1	2	3	4	5	6	7	8	9	10
7. I bite the sides of my mouth.....	1	2	3	4	5	6	7	8	9	10
8. I chew on my tongue.....	1	2	3	4	5	6	7	8	9	10
9. I chew on objects like pens or .. Pencils.	1	2	3	4	5	6	7	8	9	10
10. I chew on toothpicks.....	1	2	3	4	5	6	7	8	9	10
11. I thrust my jaw forward.....	1	2	3	4	5	6	7	8	9	10
12. I move my jaw from side to side.	1	2	3	4	5	6	7	8	9	10
13. I rest my head on my hands ..... while sitting.	1	2	3	4	5	6	7	8	9	10

	Never								Almost Always
14. I bite my nails.....	1	2	3	4	5	6	7	8	9	10
15. I smoke cigarettes.....	1	2	3	4	5	6	7	8	9	10
16. I chew tobacco.....	1	2	3	4	5	6	7	8	9	10
17. I wet my lips with my tongue...	1	2	3	4	5	6	7	8	9	10
18. I sleep on my stomach.....	1	2	3	4	5	6	7	8	9	10
19. I yawn.....	1	2	3	4	5	6	7	8	9	10
20. I grind my teeth at night.....	1	2	3	4	5	6	7	8	9	10
21. I move around while sitting	1	2	3	4	5	6	7	8	9	10
22. I shift my position while ..... standing.	1	2	3	4	5	6	7	8	9	10
23. I move my feet or legs while.... sitting.	1	2	3	4	5	6	7	8	9	10
24. I move my feet or legs while standing in one position.....	1	2	3	4	5	6	7	8	9	10
25. I pace.....	1	2	3	4	5	6	7	8	9	10
26. I touch my face or my hair.....	1	2	3	4	5	6	7	8	9	10
27. I tap with my fingers or other... objects.	1	2	3	4	5	6	7	8	9	10
28. I squint my eyes.....	1	2	3	4	5	6	7	8	9	10

Appendix H

Pre- and Post-Treatment Assessment Questionnaire Packet

This first section is written to inform you of what you can expect to occur today. Please read this first section carefully. Place your initials at the bottom of the first page, and sign your name on the line next to the **X**. Your signature indicates that you have been fully informed about the nature of this study and that you give your consent to participate. If you have any questions, please ask. To ensure confidentiality, this paper will be removed from the packet and placed in a secure file.

Title of Research: Treatment of TMD Using a Habit Reversal Treatment in a Minimal Therapist Contact Format.

Investigators: Sandy Gramling, Ph.D., LCP, Associate Professor, Professor of Psychology
Don Townsend, M.A., Clinical Psychology Graduate Student
Rob Nicholson, M.S., Clinical Psychology Graduate Student

Introduction: Previous research has shown that lifestyle factors such as environmental challenges and stress can play a role in the development and maintenance of facial pain. Stress is presumed to produce destructive oral behaviors like teeth clenching and grinding, jaw thrusting, etc. Often time, these oral behaviors occur without a person being aware of them. Habitual tetch clenching, grinding, and other motor habits can lead to facial pain. This study is first designed to assess how your body responds to stress and how well our treatment program works to reduce destructive oral habits and facial pain. Experimental tasks are commonly used to simulate stressful situations in real-life.

If you choose to participate in this study, you will be asked to complete several questionnaires before and after treatment. We will also assess how your body reacts to stress before and after participating in the treatment program. You will have your facial muscle activity, heart rate, skin temperature and skin conductance recorded by computer using standard recording procedures. Sensors will be attached to your jaw to measure muscle tension and additional sensors will be taped or strapped to your hand to measure skin temperature and skin conductance. The entire assessment session will be video taped to allow us to make sure the experimenter followed the procedures correctly and to facilitate coding behavioral responses to the experimental tasks. In addition, jaw functions will be assessed through measuring maximum jaw opening, assessment for joint sounds, and assessment of tenderness of the muscles around the jaw.

The current study examines the usefulness of a treatment previously found to be effective in reducing facial pain, in a new, more cost-effective format. Following the initial assessment, you will be randoly placed in either the treatment condition or the wait-list condition. If you are assigned to the waiting list you will not receive treatment immediately but instead you will keep records of your pain for the few weeks prior to beginning treatment. After the 7-week waiting period you will receive the treatment given to other participants.

If you choose to participate in this study you will be asked to complete several questionnaires, attend a assessment to examine reactions to stress, participate in the treatment program, and complete the post-treatment assessment. This treatment program is designed to improve overall stress management, reduce maladaptive oral habits, improve facial posture, reduce muscle tension and decrease the frequency and intensity of pain episodes. The treatment program you will be participating in has been shown to be effective when provided in a group format. We have found that many people with facial pain would prefer to receive treatment but can not because of scheduling constraints, therefore we have adapted our treatment for use in a home-based self-help format. You will receive instructions from a therapist on how to use the manual and the therapist will remain in contact with you on a weekly basis during treatment using e-mail or the telephone.

X_____ (your initials here))

Alternative Therapy. Should you decide not to participate in this treatment, you will be given the option to either utilize the treatment manual independent of therapist assistance, or given a referral to the Center for Psychological Services and Development (CPSD) at Virginia Commonwealth University. Treatment at the CPSD will be provided on an individual basis for a per session fee based on your income level.
Benefits: This treatment is designed to improve overall stress management, reduce maladaptive oral habits, improve facial posture, reduce muscle tension and decrease the frequency and intensity of pain episodes. Benefits of participating in the treatment study include enhancing your knowledge of how your body reacts to stress and learning new skills to manage stress and pain episodes. In addition, if you fully complete the pre-assessment, the 7 week program, and the post-treatment assessment, then you will receive $40.

Risks, Inconvenience, Discomfort: During the assessment portion of the study, risks include temporary frustration and anxiety while playing an electronic game. There is no danger or physical risk, although, minor skin irritation may occur on the surface of the skin where the sensors are placed. There are virtually no risks during treatment, which is provided free of charge. Inconvenience will include the time spent completing questionnaires, attending two assessment sessions, keeping records, reading homework lessons, and practicing various skills coverd in the treatment manual.

Cost of Participation: The only cost of the program to you is the time taken to complete questionnaires and the weekly assignments. There are 7 individual lessons, which require some preparation and practice time during the week (approximately 2-3 hours for each lesson). You will also be required to take time to complete several questionnaires and come to the psychology lab for two assessments. Inconveniences will include the time spent completing questionnaires, attending two assessment sessions, keeping records, reading homework lessons, and practicing various skills.

Research Related Injury: In the event of physical and/or mental injury resulting from your participation in this research project, Virginia Commonwealth University will not provide compensation. If injury occurs, medical treatment will be available at the MCV hospitals. Fees for such treatment will be billed to you or to appropriate third party insurance.

Confidentiality of Data: The results of participation in this study will be confidential and will not be released unless required by law or with the fully informed written consent of participants. Any presentations or publications that result from this study will be presented as group statistics, thereby insuring that the identity of individual participants are completely obscured. All information gathered as a function of this study will be kept strictly confidential. All correspondence will be printed and stored in your file, and then deleted from the e-mail system (if the subject utilizes e-mail for corresponding between lessons). All client information will be kept in locked filing cabinets. There are limits to confidentiality where your therapist is required by law to reveal information without your consent. These situations are as follows: 1) If a court of law subpoenas your records, 2) If you are judged to be an immediate danger to yourself or another person, 3) If there is reason to suspect child abuse.

Withdrawal: Participants are free to withdraw from this study at anytime. If you do not complete the treatment however, all or part of your deposit for therapy will be forfeit. You have the right to refuse specific techniques or to ask questions about methods used in the treatment. All additional questions regarding this study will be answered by the therapists/investigators.

You have read and understand the information provided above. The nature and purpose of this research has been satisfactorily explained to you. By signing below, you consent to participate in this study and acknowledge that your participation is entirely voluntary. A copy of this form will be provided at your request. If any questions or concerns related to this study arise in the future, you may contact either Sandy Gramling, Ph.D., LCP at (804) 828-8795 or Don Townsend at (804) 828-1867.

X_____ (your initials here))

The next set of questions are designed to give us a history of your pain as well as the various methods of treatment you may have used in the past for your pain. This information helps us know what types of treatment might be most effective for your chronic pain.

Q-1. Below is a list of medical interventions that have been used to treat people's facial pain. Please answer yes or no to whether you have tried one of these methods. If you answer yes, write down the frequency that you that particular method and rate its effectiveness.

	Tried		Frequency of Use	Effectiveness						
	Yes	No		Not at all						Extremely
1. Teeth filing.....	❑	❑	_____	1	2	3	4	5	6	7
2. Mouth guard.....	❑	❑	_____	1	2	3	4	5	6	7
3. Physical therapy..	❑	❑	_____	1	2	3	4	5	6	7
4. TENS Unit.....	❑	❑	_____	1	2	3	4	5	6	7
5. Acupuncture.....	❑	❑	_____	1	2	3	4	5	6	7
6. Surgery.....	❑	❑	_____	1	2	3	4	5	6	7
7. Other.....	❑	❑	_____	1	2	3	4	5	6	7

(please give details)

Q-2. Below is a list of self-management interventions that have been used to treat people's facial pain. Please answer yes or no to whether you have tried one of these methods. If you answer yes, write down the frequency that you that particular method and rate its effectiveness.

	Tried		Frequency of Use	Effectiveness						
	Yes	No		Not at all						Extremely
1. Hot compress.....	❑	❑	_____	1	2	3	4	5	6	7
2. Cold compress....	❑	❑	_____	1	2	3	4	5	6	7
3. Biofeedback.....	❑	❑	_____	1	2	3	4	5	6	7
4. Relaxation exercises	❑	❑	_____	1	2	3	4	5	6	7
5. Go to sleep.....	❑	❑	_____	1	2	3	4	5	6	7
6. Have a drink.....	❑	❑	_____	1	2	3	4	5	6	7

Q-2. Below is a list of self-management interventions that have been used to treat people's facial pain. Please answer yes or no to whether you have tried one of these methods. If you answer yes, write down the frequency that you that particular method and rate its effectiveness.

	Tried		Frequency of Use	Effectiveness						
	Yes	No		Not at all						Extremely
7. Distract myself....	❑	❑	_____	1	2	3	4	5	6	7
8. Exercise.....	❑	❑	_____	1	2	3	4	5	6	7
9. Other.....	❑	❑	_____	1	2	3	4	5	6	7

(give details please)

Q-3. In column 1, please indicate all over-the-counter and prescription medication that you use to treat your facial pain. Then write down the frequency that you use that particular medication and rate its effectiveness.

		Effectiveness						
Medication	Frequency of Use	Not at all						Extremely
1. _____	_____	1	2	3	4	5	6	7
2. _____	_____	1	2	3	4	5	6	7
3. _____	_____	1	2	3	4	5	6	7
4. _____	_____	1	2	3	4	5	6	7
5. _____	_____	1	2	3	4	5	6	7

Q-4 Answer the following questions as specifically as possible to help us understand the history of your pain.

1. When did you have your first episode of facial pain?

_____

_____

2. Was your first experience of facial pain accompanied by some event or injury (e.g. a fall; getting wisdom teeth pulled, etc.)? Please explain.

_____

_____

Q-4 Answer the following questions as specifically as possible to help us understand the history of your pain.

3. When did your current episode of facial pain begin?

_____

_____

Some people receive various types of financial compensation related to their facial pain (e.g. workman's compensation, lawsuits, etc.). Have you ever been awarded any financial compensation for your facial pain or are you presently taking steps to receive financial compensation related to your facial pain? Please explain.

_____

_____

_____

_____

_____

5. Please list below any other health problems you may have experienced requiring medical intervention (e.g., diabetes, asthma, high blood pressure, etc.).

Health Problem	Date of Onset	Duration of Problem	Treatment
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

An important part of our evaluation includes examination of pain from your perspective because you know your pain better than anyone else. The following questions are designed to help us learn more about your pain and how it affects your life.

Q-6 Read each question carefully and then circle a number on the scale under that question to indicate how that specific question applies to you.

1. Rate the level of your pain at the present moment.

0	1	2	3	4	5	6
No pain						Very intense pain

2. In general, how much does your pain interfere with your day-to-day activities?

0	1	2	3	4	5	6
No interference						Extreme interference

Q-6 Read each question carefully and then circle a number on the scale under that question to indicate how that specific question applies to you.

3. Since the time your pain began, how much has your pain changed your ability to work?
(____ Check here, if you have retired for reasons other than your pain).

0	1	2	3	4	5	6
No change						Extreme change

4. How much has your pain changed the amount of satisfaction or enjoyment you get from taking part in social and recreational activities?

0	1	2	3	4	5	6
No change						Extreme change

5. How supportive or helpful is your spouse (significant other) to you in relation to your pain?

0	1	2	3	4	5	6
Not at all supportive						Extremely supportive

6. Rate your overall mood during the past week.

0	1	2	3	4	5	6
Extremely low						Extremely high

7. How much has your pain interfered with your ability to get enough sleep?

0	1	2	3	4	5	6
No interference						Extreme interference

8. On the average, how severe has your pain been during the last week?

0	1	2	3	4	5	6
Not at all severe						Extremely severe

9. How able are you to predict when your pain will start, get better, or get worse?

0	1	2	3	4	5	6
Not at all able to predict						Very able to predict

10. How much has your pain changed your ability to take part in recreational and other social activities?

0	1	2	3	4	5	6
No change						Extreme change

11. How much do you limit your activities in order to keep your pain from getting worse?

0	1	2	3	4	5	6
Not at all						Very much

Q-6 Read each question carefully and then circle a number on the scale under that question to indicate how that specific question applies to you.

12. How much has your pain changed the amount of satisfaction or enjoyment you get from family-related activities?

0	1	2	3	4	5	6
No change						Extreme change

13. How worried is your spouse (significant other) about you because of your pain?

0	1	2	3	4	5	6
Not at all worried						Extremely worried

14. During the past week how much control do you feel that you have had over your life?

0	1	2	3	4	5	6
No control						Extreme control

15. On an average day, how much does your pain vary (increase or decrease)?

0	1	2	3	4	5	6
Remains the same						Changes a lot

16. How much suffering do you experience because of your pain?

0	1	2	3	4	5	6
No suffering						Extreme suffering

17. How often are you able to do something that helps to reduce your pain?

0	1	2	3	4	5	6
Never						Very often

18. How much has your pain changed your relationship with your spouse, family, or significant other?

0	1	2	3	4	5	6
No change						Extreme change

19. How much has your pain changed the amount of satisfaction or enjoyment you get from work? (_____ Check here, if you are not presently working).

0	1	2	3	4	5	6
No change						Extreme change

20. How attentive is your spouse (significant other) to you because of your pain?

0	1	2	3	4	5	6
Not at all attentive						Extremely attentive

Q-6 Read each question carefully and then circle a number on the scale under that question to indicate how that specific question applies to you.

21. During the past week how much do you feel that you've been able to deal with your problems?

0	1	2	3	4	5	6
Not at all						Extremely well

22. How much control do you feel that you have over your pain?

0	1	2	3	4	5	6
No control at all						A great deal of control

23. How much has your pain changed your ability to do household chores?

0	1	2	3	4	5	6
No change						Extreme change

24. During the past week, how successful were you in coping with stressful situations in your life?

0	1	2	3	4	5	6
Not at all successful						Extremely successful

25. How much has your pain interfered with your ability to plan activities?

0	1	2	3	4	5	6
No change						Extreme change

26. During the past week how irritable have you been?

0	1	2	3	4	5	6
Not at all irritable						Extremely irritable

27. How much has your pain changed or interfered with friendships with people other than your family?

0	1	2	3	4	5	6
No change						Extreme change

28. During the past week how tense or anxious have you been?

0	1	2	3	4	5	6
Not at all tense or anxious						Extremely tense and anxious

In this section, we are interested in knowing how your spouse (or significant other) responds to you when he or she knows that you are in pain. Your answers should indicate how often your spouse (or significant other) responds to you in that particular way when you are in pain.

Q-7 On the scale listed below each question, circle a number to indicate how often your spouse (or significant other) responds to you in that particular way when you are in pain.

1. Ignores me.

0 1 2 3 4 5 6
Never Very Often

2. Asks me what he/she can do to help.

0 1 2 3 4 5 6
Never Very Often

3. Reads to me

0 1 2 3 4 5 6
Never Very Often

4. Gets irritated with me.

0 1 2 3 4 5 6
Never Very Often

5. Takes over my jobs or duties.

0 1 2 3 4 5 6
Never Very Often

6. Talks to me about something else to take my mind off the pain.

0 1 2 3 4 5 6
Never Very Often

7. Gets frustrated with me.

0 1 2 3 4 5 6
Never Very Often

8. Tries to get me to rest.

0 1 2 3 4 5 6
Never Very Often

Q-7 On the scale listed below each question, <u>circle a number</u> to indicate <u>how often</u> your spouse (or significant other) responds to you in that particular way when you are in pain.

9. Tries to involve me in some activity.

0 1 2 3 4 5 6
Never Very Often

10. Gets angry with me.

0 1 2 3 4 5 6
Never Very Often

11. Gets me pain medication.

0 1 2 3 4 5 6
Never Very Often

12. Encourages me to work on a hobby.

0 1 2 3 4 5 6
Never Very Often

13. Gets me something to eat or drink.

0 1 2 3 4 5 6
Never Very Often

14. Turns on the TV to take my mind off the pain.

0 1 2 3 4 5 6
Never Very Often

This next set of questions helps us know about some activities that you perform on a daily basis. Listed below are 19 activities that people perform daily.

Q-8 Please indicate how often you do each of these by <u>circling a number</u> on the scale listed below each activity.

1. Wash dishes.

0 1 2 3 4 5 6
Never Very Often

2. Mow the lawn (_____ Check here, if you do not have a lawn to mow).

0 1 2 3 4 5 6
Never Very Often

3. Go out to eat.

0 1 2 3 4 5 6
Never Very Often

Q-8 Please indicate how often you do each of these by <u>circling a number</u> on the scale listed below each activity.

4. Play cards or other games.

0	1	2	3	4	5	6
Never						Very Often

5. Go grocery shopping.

0	1	2	3	4	5	6
Never						Very Often

6. Work in the garden (_____ Check here, if you do not have a garden).

0	1	2	3	4	5	6
Never						Very Often

7. Go to a movie.

0	1	2	3	4	5	6
Never						Very Often

8. Visit friends.

0	1	2	3	4	5	6
Never						Very Often

9. Help with the house cleaning.

0	1	2	3	4	5	6
Never						Very Often

10. Work on the car (_____ Check here, if you do not have a car).

0	1	2	3	4	5	6
Never						Very Often

11. Take a ride in a car or bus.

0	1	2	3	4	5	6
Never						Very Often

12. Visit relatives. (_____ Check her, if you do not have relatives within 100 miles).

0	1	2	3	4	5	6
Never						Very Often

13. Prepare a meal.

0	1	2	3	4	5	6
Never						Very Often

14. Wash the car (_____ Check here, if you do not have a car).

0	1	2	3	4	5	6
Never						Very Often

Q-8 Please indicate how often you do each of these by <u>circling a number</u> on the scale listed below each activity.

15. Take a trip.

0	1	2	3	4	5	6
Never						Very Often

16. Go to a park or beach.

0	1	2	3	4	5	6
Never						Very Often

17. Do the laundry.

0	1	2	3	4	5	6
Never						Very Often

18. Work on a needed household repair

0	1	2	3	4	5	6
Never						Very Often

19. Engage in sexual activities.

0	1	2	3	4	5	6
Never						Very Often

Listed below are a number of behaviors involving the mouth and face that people sometimes engage in to varying degrees. This helps us understand more about what types of behavior **you** engage in that could be contributing to your facial pain.

Q-9 Please answer the following questions by circling the number that best indicates the degree to which you engage in the specified behavior.

	Never									Almost Always
1. I clench my teeth.....	1	2	3	4	5	6	7	8	9	10
2. I smoke a pipe.....	1	2	3	4	5	6	7	8	9	10
3. I bite my lips.....	1	2	3	4	5	6	7	8	9	10
4. I chew gum.....	1	2	3	4	5	6	7	8	9	10
5. I play a musical instrument that requires extensive use of my lips or chin.	1	2	3	4	5	6	7	8	9	10
6. I hold the telephone receiver between my chin and shoulder.....	1	2	3	4	5	6	7	8	9	10
7. I bite the sides of my mouth.....	1	2	3	4	5	6	7	8	9	10

Q-9 Please answer the following questions by circling the number that best indicates the degree to which you engage in the specified behavior.

	Never									Almost Always
8. I chew on my tongue.....	1	2	3	4	5	6	7	8	9	10
9. I chew on objects like pens or pencils...	1	2	3	4	5	6	7	8	9	10
10. I chew on toothpicks.....	1	2	3	4	5	6	7	8	9	10
11. I thrust my jaw forward.....	1	2	3	4	5	6	7	8	9	10
12. I move my jaw from side to side.....	1	2	3	4	5	6	7	8	9	10
13. I rest my head on my hands while sitting.	1	2	3	4	5	6	7	8	9	10
14. I bite my nails.....	1	2	3	4	5	6	7	8	9	10
15. I smoke cigarettes.....	1	2	3	4	5	6	7	8	9	10
16. I chew tobacco.....	1	2	3	4	5	6	7	8	9	10
17. I wet my lips with my tongue.....	1	2	3	4	5	6	7	8	9	10
18. I sleep on my stomach.....	1	2	3	4	5	6	7	8	9	10
19. I yawn.....	1	2	3	4	5	6	7	8	9	10
20. I grind my teeth at night.....	1	2	3	4	5	6	7	8	9	10
I move around while sitting (i.e. shifting).	1	2	3	4	5	6	7	8	9	10
22. I shift my position while standing.....	1	2	3	4	5	6	7	8	9	10
23. I move my feet or legs while sitting.....	1	2	3	4	5	6	7	8	9	10
I move my feet or legs while standing in one position.....	1	2	3	4	5	6	7	8	9	10
25. I pace	1	2	3	4	5	6	7	8	9	10
26. I touch my face or my hair	1	2	3	4	5	6	7	8	9	10
27. I tap with my fingers or other objects....	1	2	3	4	5	6	7	8	9	10
28. I squint my eyes.....	1	2	3	4	5	6	7	8	9	10
29. I smile	1	2	3	4	5	6	7	8	9	10
30. I arch or furrow my forehead.....	1	2	3	4	5	6	7	8	9	10
31. I purse or smack my lips.....	1	2	3	4	5	6	7	8	9	10

Q-10 Please place a mark along the line corresponding to how your head, face, and jaw feel during each of the times indicated in bold.

Usual Pain

No Pain — The Most Intense Pain Imaginable

Maximum Pain

No Pain — The Most Intense Pain Imaginable

Minimum Pain

No Pain — The Most Intense Pain Imaginable

Current Pain

No Pain — The Most Intense Pain Imaginable

This next set of demographic questions are designed to tell us about the characteristics of the people we are reaching with our program. This is the last set of questions prior to the stress reactivity assessment.

Q-11 Please answer each of the following questions as thoroughly as possible.

1. Age: _____
2. Address: _____
3. E-mail address: _____
4. Phone #: _____
5. Marital Status: (Which choice best describes you?)

Married	❑	Single	❑	Separated	❑
Divorced	❑	Widowed	❑	Co-Habitating	❑

6. Income Level: (About how much money does your household earn per year?)

Below $10,000	❑	$10,001-$20,000	❑
$20,001-$30,000	❑	$30,001-$40,000	❑
$40,001-$50,000	❑	Above $50,001	❑

7. Ethnicity: (Which choice best describes you?)

Asian / Pacific Islander	❑	African American	❑
Caucasian (non-Hispanic)	❑	Hispanic	❑
Native American	❑	Alaskan Native	❑

8. What is your current occupation? _____

8a. How many hours are you employed on a weekly basis (on average):

Less than 10 ❑ 10-20 ❑ 20-30 ❑ More than 30 ❑

8b. How long have you been employed at your current place of employment?

_____

9.Education Level:(What is the highest level of education you have attained?)

Some High School ❑ High School Graduate ❑ Some College ❑

Vocational Degree ❑ College Degree ❑ Masters Degree ❑

Professional Degree ❑

9. Are you currently/have you ever taken oral birth control medication? Yes ❑ No❑

10. Do you smoke cigarettes or cigars? Yes ❑ No❑

11. If yes, how many do you smoke in a day? _____

How many usually in a day?_____

12. How many caffeinated beverages have you had today? _____

13. How many days has it been since your last menstrual cycle? _____

Thank you for completing this section. Please inform the experimenter that you are finished.

The next five sets of questions will ask you to answer either how you felt or what you did during the **PREVIOUS PHASE** of the experiment.

Q-12 Place a mark along the line corresponding to how your face , head, and jaw felt during the previous phase of the experiment.

1. No Pain — The Most Intense Pain Imaginable

Q-13 Circle the number that best indicates the degree to which you engaged in the specific behaviors below during the previous phase of the experiment.

	Never									Almost Always
1. I found myself clenching my teeth	1	2	3	4	5	6	7	8	9	10
2. I found myself grinding my teeth	1	2	3	4	5	6	7	8	9	10
3. I found myself chewing gum	1	2	3	4	5	6	7	8	9	10
4. I found myself biting the sides of my tongue or mouth	1	2	3	4	5	6	7	8	9	10
5. I found myself chewing on objects like pens and/or pencils	1	2	3	4	5	6	7	8	9	10
6. I found myself thrusting my jaw forward or to one side	1	2	3	4	5	6	7	8	9	10
7. I found myself resting my head on my hands while sitting	1	2	3	4	5	6	7	8	9	10
8. I found myself biting my nails	1	2	3	4	5	6	7	8	9	10
9. I found myself moving my leg or foot ..	1	2	3	4	5	6	7	8	9	10
10. I found myself tapping my fingers	1	2	3	4	5	6	7	8	9	10
11. I found myself _____	1	2	3	4	5	6	7	8	9	10

(Fill in a motor habit that is true of you)

Q-14 Circle the number that best indicates the intensity of each emotion that you felt during the previous phase of the experiment.

	None								Most Severe Imaginable
1. Depression	1	2	3	4	5	6	7	8	9	10
2. Anxiety	1	2	3	4	5	6	7	8	9	10
3. Frustration	1	2	3	4	5	6	7	8	9	10
4. Anger	1	2	3	4	5	6	7	8	9	10
5. Fear	1	2	3	4	5	6	7	8	9	10
6. Boredom	1	2	3	4	5	6	7	8	9	10

Q-15 Circle the number that best indicates to what extent you felt each emotion during the previous phase of the experiment.

	Very Little/ Not at all	A little	Moderately	Quite a bit	Extremely
1. Interested	1	2	3	4	5
2. Irritable	1	2	3	4	5
3. Disinterested	1	2	3	4	5
4. Alert	1	2	3	4	5
5. Excited	1	2	3	4	5
6. Ashamed	1	2	3	4	5
7. Upset	1	2	3	4	5
8. Inspired	1	2	3	4	5
9. Strong	1	2	3	4	5
10. Nervous	1	2	3	4	5
11. Guilty	1	2	3	4	5
12. Determined	1	2	3	4	5

Q-15 Circle the number that best indicates to what extent you felt each emotion during the previous phase of the experiment.

	Very Little/ Not at all	A little	Moderately	Quite a bit	Extremely
13. Scared	1	2	3	4	5
14. Attentive	1	2	3	4	5
15. Hostile	1	2	3	4	5
16. Jittery	1	2	3	4	5
17. Enthusiastic	1	2	3	4	5
18. Active	1	2	3	4	5
19. Proud	1	2	3	4	5
20. Afraid	1	2	3	4	5

Q-16 Circle the number that best indicates to what extent you experienced each of these during the previous phase of the experiment.

	Not at all	Somewhat	Moderately	Very Much
1. I feel pleasant	1	2	3	4
2. I feel regretful	1	2	3	4
3. I find myself worrying about something	1	2	3	4
4. I am calm	1	2	3	4

Thank you for completing this section. Please inform the experimenter that you are finished.

The next five sets of questions will ask you to answer either how you felt or what you did during the **PREVIOUS PHASE** of the experiment.

Q-17 Place a mark along the line corresponding to how your face , head, and jaw felt during the previous phase of the experiment.

1. No Pain — The Most Intense Pain Imaginable

Q-18 Circle the number that best indicates the degree to which you engaged in the specific behaviors below during the previous phase of the experiment.

	Never									Almost Always
1. I found myself clenching my teeth	1	2	3	4	5	6	7	8	9	10
2. I found myself grinding my teeth	1	2	3	4	5	6	7	8	9	10
3. I found myself chewing gum	1	2	3	4	5	6	7	8	9	10
4. I found myself biting the sides of my tongue or mouth	1	2	3	4	5	6	7	8	9	10
5. I found myself chewing on objects like pens and/or pencils	1	2	3	4	5	6	7	8	9	10
6. I found myself thrusting my jaw forward or to one side	1	2	3	4	5	6	7	8	9	10
7. I found myself resting my head on my hands while sitting	1	2	3	4	5	6	7	8	9	10
8. I found myself biting my nails	1	2	3	4	5	6	7	8	9	10
9. I found myself moving my leg or foot ..	1	2	3	4	5	6	7	8	9	10
10. I found myself tapping my fingers	1	2	3	4	5	6	7	8	9	10
11. I found myself _____	1	2	3	4	5	6	7	8	9	10

(Fill in a motor habit that is true of you)

Q-19 Circle the number that best indicates the intensity of each emotion that you felt during the previous phase of the experiment.

	None								Most Severe Imaginable
1. Depression	1	2	3	4	5	6	7	8	9	10
2. Anxiety	1	2	3	4	5	6	7	8	9	10
3. Frustration	1	2	3	4	5	6	7	8	9	10
4. Anger	1	2	3	4	5	6	7	8	9	10
5. Fear	1	2	3	4	5	6	7	8	9	10
6. Boredom	1	2	3	4	5	6	7	8	9	10

Q-20 Circle the number that best indicates to what extent you felt each emotion during the previous phase of the experiment.

	Very Little/ Not at all	A little	Moderately	Quite a bit	Extremely
1. Interested	1	2	3	4	5
2. Irritable	1	2	3	4	5
3. Disinterested	1	2	3	4	5
4. Alert	1	2	3	4	5
5. Excited	1	2	3	4	5
6. Ashamed	1	2	3	4	5
7. Upset	1	2	3	4	5
8. Inspired	1	2	3	4	5
9. Strong	1	2	3	4	5
10. Nervous	1	2	3	4	5
11. Guilty	1	2	3	4	5
12. Determined	1	2	3	4	5

Q-20 Circle the number that best indicates to what extent you felt each emotion during the previous phase of the experiment.

	Very Little/ Not at all	A little	Moderately	Quite a bit	Extremely
13. Scared	1	2	3	4	5
14. Attentive	1	2	3	4	5
15. Hostile	1	2	3	4	5
16. Jittery	1	2	3	4	5
17. Enthusiastic	1	2	3	4	5
18. Active	1	2	3	4	5
19. Proud	1	2	3	4	5
20. Afraid	1	2	3	4	5

Q-21 Circle the number that best indicates to what extent you experienced each of these during the previous phase of the experiment.

	Not at all	Somewhat	Moderately	Very Much
1. I feel pleasant	1	2	3	4
2. I feel regretful	1	2	3	4
3. I find myself worrying about something	1	2	3	4
4. I am calm	1	2	3	4

Thank you for completing this section. Please inform the experimenter that you are finished.

The next five sets of questions will ask you to answer either how you felt or what you did during the **PREVIOUS PHASE** of the experiment.

Q-22 Place a mark along the line corresponding to how your face , head, and jaw felt during the previous phase of the experiment.

1. No Pain — The Most Intense Pain Imaginable

Q-23 Circle the number that best indicates the degree to which you engaged in the specific behaviors below during the previous phase of the experiment.

	Never									Almost Always
1. I found myself clenching my teeth	1	2	3	4	5	6	7	8	9	10
2. I found myself grinding my teeth	1	2	3	4	5	6	7	8	9	10
3. I found myself chewing gum	1	2	3	4	5	6	7	8	9	10
4. I found myself biting the sides of my tongue or mouth	1	2	3	4	5	6	7	8	9	10
5. I found myself chewing on objects like pens and/or pencils	1	2	3	4	5	6	7	8	9	10
6. I found myself thrusting my jaw forward or to one side	1	2	3	4	5	6	7	8	9	10
7. I found myself resting my head on my hands while sitting	1	2	3	4	5	6	7	8	9	10
8. I found myself biting my nails	1	2	3	4	5	6	7	8	9	10
9. I found myself moving my leg or foot ..	1	2	3	4	5	6	7	8	9	10
10. I found myself tapping my fingers	1	2	3	4	5	6	7	8	9	10
11. I found myself _____	1	2	3	4	5	6	7	8	9	10

(Fill in a motor habit that is true of you)

Q-24 Circle the number that best indicates the intensity of each emotion that you felt during the previous phase of the experiment.

	None									Most Severe Imaginable
1. Depression	1	2	3	4	5	6	7	8	9	10
2. Anxiety	1	2	3	4	5	6	7	8	9	10
3. Frustration	1	2	3	4	5	6	7	8	9	10
4. Anger	1	2	3	4	5	6	7	8	9	10
5. Fear	1	2	3	4	5	6	7	8	9	10
6. Boredom	1	2	3	4	5	6	7	8	9	10

Q-25 Circle the number that best indicates to what extent you felt each emotion during the previous phase of the experiment.

	Very Little/ Not at all	A little	Moderately	Quite a bit	Extremely
1. Interested	1	2	3	4	5
2. Irritable	1	2	3	4	5
3. Disinterested	1	2	3	4	5
4. Alert	1	2	3	4	5
5. Excited	1	2	3	4	5
6. Ashamed	1	2	3	4	5
7. Upset	1	2	3	4	5
8. Inspired	1	2	3	4	5
9. Strong	1	2	3	4	5
10. Nervous	1	2	3	4	5
11. Guilty	1	2	3	4	5
12. Determined	1	2	3	4	5

Q-25 Circle the number that best indicates to what extent you felt each emotion during the previous phase of the experiment.

	Very Little/ Not at all	A little	Moderately	Quite a bit	Extremely
13. Scared	1	2	3	4	5
14. Attentive	1	2	3	4	5
15. Hostile	1	2	3	4	5
16. Jittery	1	2	3	4	5
17. Enthusiastic	1	2	3	4	5
18. Active	1	2	3	4	5
19. Proud	1	2	3	4	5
20. Afraid	1	2	3	4	5

Q-26 Circle the number that best indicates to what extent you experienced each of these during the previous phase of the experiment.

	Not at all	Somewhat	Moderately	Very Much
1. I feel pleasant	1	2	3	4
2. I feel regretful	1	2	3	4
3. I find myself worrying about something	1	2	3	4
4. I am calm	1	2	3	4

Thank you for completing this section. Please inform the experimenter that you are finished.

The next five sets of questions will ask you to answer either how you felt or what you did during the **PREVIOUS PHASE** of the experiment.

Q-27 Place a mark along the line corresponding to how your face , head, and jaw felt during the previous phase of the experiment.

1. No Pain — The Most Intense Pain Imaginable

Q-28 Circle the number that best indicates the degree to which you engaged in the specific behaviors below during the previous phase of the experiment.

	Never									Almost Always
1. I found myself clenching my teeth	1	2	3	4	5	6	7	8	9	10
2. I found myself grinding my teeth	1	2	3	4	5	6	7	8	9	10
3. I found myself chewing gum	1	2	3	4	5	6	7	8	9	10
4. I found myself biting the sides of my tongue or mouth	1	2	3	4	5	6	7	8	9	10
5. I found myself chewing on objects like pens and/or pencils	1	2	3	4	5	6	7	8	9	10
6. I found myself thrusting my jaw forward or to one side	1	2	3	4	5	6	7	8	9	10
7. I found myself resting my head on my hands while sitting	1	2	3	4	5	6	7	8	9	10
8. I found myself biting my nails	1	2	3	4	5	6	7	8	9	10
9. I found myself moving my leg or foot ..	1	2	3	4	5	6	7	8	9	10
10. I found myself tapping my fingers	1	2	3	4	5	6	7	8	9	10
11. I found myself _____	1	2	3	4	5	6	7	8	9	10

(Fill in a motor habit that is true of you)

Q-29 Circle the number that best indicates the intensity of each emotion that you felt during the previous phase of the experiment.

	None									Most Severe Imaginable
1. Depression	1	2	3	4	5	6	7	8	9	10
2. Anxiety	1	2	3	4	5	6	7	8	9	10
3. Frustration	1	2	3	4	5	6	7	8	9	10
4. Anger	1	2	3	4	5	6	7	8	9	10
5. Fear	1	2	3	4	5	6	7	8	9	10
6. Boredom	1	2	3	4	5	6	7	8	9	10

Q-30 Circle the number that best indicates to what extent you felt each emotion during the previous phase of the experiment.

	Very Little/ Not at all	A little	Moderately	Quite a bit	Extremely
1. Interested	1	2	3	4	5
2. Irritable	1	2	3	4	5
3. Disinterested	1	2	3	4	5
4. Alert	1	2	3	4	5
5. Excited	1	2	3	4	5
6. Ashamed	1	2	3	4	5
7. Upset	1	2	3	4	5
8. Inspired	1	2	3	4	5
9. Strong	1	2	3	4	5
10. Nervous	1	2	3	4	5
11. Guilty	1	2	3	4	5
12. Determined	1	2	3	4	5

Q-30 Circle the number that best indicates to what extent you felt each emotion during the previous phase of the experiment.

	Very Little/ Not at all	A little	Moderately	Quite a bit	Extremely
13. Scared	1	2	3	4	5
14. Attentive	1	2	3	4	5
15. Hostile	1	2	3	4	5
16. Jittery	1	2	3	4	5
17. Enthusiastic	1	2	3	4	5
18. Active	1	2	3	4	5
19. Proud	1	2	3	4	5
20. Afraid	1	2	3	4	5

Q-31 Circle the number that best indicates to what extent you experienced each of these during the previous phase of the experiment.

	Not at all	Somewhat	Moderately	Very Much
1. I feel pleasant	1	2	3	4
2. I feel regretful	1	2	3	4
3. I find myself worrying about something	1	2	3	4
4. I am calm	1	2	3	4

Thank you for completing this section. Please inform the experimenter that you are finished.

Debriefing Statement

A common location for chronic pain is the jaw and the muscles surrounding the jaw. Some researchers believe that stress makes people engage in certain oral behaviors such as teeth clenching, fingernail biting, or chewing on pens and pencils. The result of these behaviors is muscle pain in the jaw. This study is an attempt to determine what types of challenges will cause people to engage in these habits and whether people who suffer from jaw pain will differ in the amount of these oral behaviors they do based upon the level of stressfulness of the task. We presented you with a task to see how your body would react both physiologically and behaviorally. That is why you were hooked up with electrodes and we measured your heart rate, skin temperature and other psychophysiological recordings. We video taped you for these same purposes. Our hope is that the findings from this study will help us explain how jaw pain develops and is maintained. Once we have a better idea about the nature of this jaw pain, it will be much easier to design behavioral treatments to eliminate or perhaps prevent the problems. Thank you again for coming in and participating in the study.

Below is a list of problems and complaints that people with facial pain sometimes have. The purpose of this final set of questions is for us to find out how much discomfort a particular problem has caused you **during the past week, including today.**

Q-32 Circle one number for each problem and do not skip any items. During the past week, including today, to what extent have you been distressed by.....

	Not at all	A little bit	Moderately	Quite a bit	Extremely
1. Nervousness or shakiness.....	0	1	2	3	4
2. Faintness or dizziness.....	0	1	2	3	4
3. The idea that someone else can control your thoughts.....	0	1	2	3	4
4. Feeling others are to blame for most of your troubles.....	0	1	2	3	4
5. Trouble remembering things.....	0	1	2	3	4
6. Feeling easily annoyed or irritated.....	0	1	2	3	4
7. Pains in heart or chest.....	0	1	2	3	4
8. Feeling afraid in open spaces.....	0	1	2	3	4
9. Thoughts of ending your life.....	0	1	2	3	4
10. Feeling that most people cannot be trusted.....	0	1	2	3	4
11. Poor appetite.....	0	1	2	3	4
12. Suddenly scared for no reason.....	0	1	2	3	4
13. Temper outbursts that you could not control.....	0	1	2	3	4
14. Feeling lonely even when you are with people.....	0	1	2	3	4
15. Feeling blocked in getting things done.....	0	1	2	3	4
16. Feeling lonely.....	0	1	2	3	4
17. Feeling blue.....	0	1	2	3	4
18. Feeling no interest in things.....	0	1	2	3	4

Q-32 Circle one number for each problem and do not skip any items. During the past week, including today, to what extent have you been distressed by.....

	Not at all	A little bit	Moderately	Quite a bit	Extremely
19. Feeling fearful.....	0	1	2	3	4
20. Your feelings being easily hurt.....	0	1	2	3	4
21. Feeling that people are unfriendly or dislike you.....	0	1	2	3	4
22. Feeling inferior to others.....	0	1	2	3	4
23. Nausea or upset stomach.....	0	1	2	3	4
24. Feeling that you are watched or talked about.....	0	1	2	3	4
25. Trouble falling asleep.....	0	1	2	3	4
26. Having to check and double check what you do.....	0	1	2	3	4
27. Difficulty making decisions.....	0	1	2	3	4
28. Feeling afraid to travel on buses, subways or trains.....	0	1	2	3	4
29. Trouble getting your breath.....	0	1	2	3	4
30. Hot or cold spells.....	0	1	2	3	4
31. Having to avoid certain things, places and activities because they frighten you...	0	1	2	3	4
32. Your mind going blank.....	0	1	2	3	4
33. Numbness or tingling in parts of your body.....	0	1	2	3	4
34. The idea that you should be punished for your sins.....	0	1	2	3	4
35. Feeling hopeless about the future.....	0	1	2	3	4
36. Trouble concentrating.....	0	1	2	3	4
37. Feeling weak in parts of your body.....	0	1	2	3	4
38. Feeling tense or keyed up.....	0	1	2	3	4
39. Thoughts of death or dying.....	0	1	2	3	4

Q-32 Circle one number for each problem and do not skip any items. During the past week, including today, to what extent have you been distressed by.....

	Not at all	A little bit	Moderately	Quite a bit	Extremely
40. Having urges to beat, injure or harm someone.....	0	1	2	3	4
41. Having urges to break or smash things.....	0	1	2	3	4
42. Feeling very self-conscious with others....	0	1	2	3	4
43. Feeling uneasy in crowds.....	0	1	2	3	4
44. Never feeling close to another person.....	0	1	2	3	4
45. Spells of terror or panic.....	0	1	2	3	4
46. Getting into frequent arguments.....	0	1	2	3	4
47. Feeling nervous when you are left alone...	0	1	2	3	4
48. Others not giving you proper credit for your achievements.....	0	1	2	3	4
49. Feeling so restless you couldn't sit still.....	0	1	2	3	4
50. Feeling of worthlessness.....	0	1	2	3	4
51. Feeling that people will take advantage of you if you let them.....	0	1	2	3	4
52. Feeling of guilt.....	0	1	2	3	4
53. The idea that something is wrong in your head.....	0	1	2	3	4

Hassles are irritants that can range from minor annoyances to fairly major pressures, problems, or difficulties. They can occur few or many times. Listed in the center of the following pages are a number of ways in which a person can feel hassled. FIRST, CIRCLE ONLY THOSE HASSLES THAT HAVE HAPPENED TO YOU IN THE PAST MONTH. IF A HASSLE DID NOT OCCUR IN THE LAST MONTH DO NOT CIRCLE IT.

Q-1T Look at the numbers on the right of the items you circled. Indicate by circling a 1, 2, or 3 how SEVERE each of the circled hassles has been for you in the past month.

	SEVERITY		
	Some	Moderate	Extreme
1. Misplacing or losing things	1	2	3
2. Troublesome neighbors	1	2	3
3. Social obligations	1	2	3
4. Inconsiderate smokers	1	2	3
5. Troubling thoughts about your future	1	2	3
6. Thoughts about death	1	2	3
7. Health of a family member	1	2	3
8. Not enough money for clothing	1	2	3
9. Not enough money for housing	1	2	3
10. Concerns about owing money	1	2	3
11. Concerns about getting credit	1	2	3
12. Concerns about money for emergencies	1	2	3
13. Someone owes you money	1	2	3
14. Financial responsibility for someone who doesn't live with you	1	2	3
15. Cutting down on electricity, water, etc.	1	2	3

Q-1T Look at the numbers on the right of the items you circled. Indicate by circling a 1, 2, or 3 how SEVERE each of the <u>circled</u> hassles has been for you in the past month.

	SEVERITY		
	Some	Moderate	Extreme
16. Smoking too much	1	2	3
17. Use of alcohol	1	2	3
18. Personal use of drugs	1	2	3
19. Too many responsibilities	1	2	3
20. Decisions about having children	1	2	3
21. Non-family members living in your house	1	2	3
22. Care for pet	1	2	3
23. Planning meals	1	2	3
24. Concerned about the meaning of life	1	2	3
25. Trouble relaxing	1	2	3
26. Trouble making decisions	1	2	3
27. Problems getting along with fellow workers	1	2	3
28. Customers or clients give you a hard time	1	2	3
29. Home maintenance (inside)	1	2	3
30. Concerns about job security	1	2	3
31. Concerns about retirement	1	2	3
32. Laid-off or out of work	1	2	3
33. Don't like current work duties	1	2	3
34. Don't like follow workers	1	2	3
35. Not enough money for basic necessities	1	2	3
36. Not enough money for food	1	2	3
37. Too many interruptions	1	2	3
38. Unexpected company	1	2	3
39. Too much time on hands	1	2	3

Q-1T Look at the numbers on the right of the items you circled. Indicate by circling a 1, 2, or 3 how SEVERE each of the circled hassles has been for you in the past month.

	SEVERITY		
	Some	Moderate	Extreme
40. Having to wait	1	2	3
41. Concerns about accidents	1	2	3
42. Being lonely	1	2	3
43. Not enough money for health care	1	2	3
44. Fear of confrontation	1	2	3
45. Financial security	1	2	3
46. Silly practical mistakes	1	2	3
47. Inability to express yourself	1	2	3
48. Physical illness	1	2	3
49. Side effects of medication	1	2	3
50. Concerns about medical treatment	1	2	3
51. Physical appearance	1	2	3
52. Fear of rejection	1	2	3
53. Difficulties with getting pregnant	1	2	3
54. Sexual problems that result from physical problems	1	2	3
55. Sexual problems other than those resulting from physical problems	1	2	3
56. Concerns about health in general	1	2	3
57. Not seeing enough people	1	2	3
58. Friends or relatives too far away	1	2	3
59. Preparing meals	1	2	3
60. Wasting time	1	2	3
61. Auto maintenance	1	2	3
62. Filling out forms	1	2	3

Q-1T Look at the numbers on the right of the items you circled. Indicate by circling a 1, 2, or 3 how SEVERE each of the <u>circled</u> hassles has been for you in the past month.

	SEVERITY		
	Some	Moderate	Extreme
63. Neighborhood deterioration	1	2	3
64. Financing children's education	1	2	3
65. Problems with employees	1	2	3
66. Problems on job due to being a woman or man	1	2	3
67. Declining physical abilities	1	2	3
68. Being exploited	1	2	3
69. Concerns about bodily functions	1	2	3
70. Rising prices of common goods	1	2	3
71. Not getting enough rest	1	2	3
72. Not getting enough sleep	1	2	3
73. Problems with aging parents	1	2	3
74. Problems with your children	1	2	3
75. Problems with persons younger than yourself	1	2	3
76. Problems with your lover	1	2	3
77. Difficulties seeing or hearing	1	2	3
78. Overloaded with family responsibilities	1	2	3
79. Too many things to do	1	2	3
80. Unchallenging work	1	2	3
81. Concerns about meeting high standards	1	2	3
82. Financial dealings with friends or acquaintances	1	2	3
83. Job dissatisfactions	1	2	3
84. Worries about decisions to change jobs	1	2	3
85. Trouble with reading, writing, or spelling abilities	1	2	3
86. Too many meetings	1	2	3

Q-1T Look at the numbers on the right of the items you circled. Indicate by circling a 1, 2, or 3 how SEVERE each of the <u>circled</u> hassles has been for you in the past month.

	SEVERITY		
	Some	Moderate	Extreme
87. Problems with divorce or separation	1	2	3
88. Trouble with arithmetic skills	1	2	3
89. Gossip	1	2	3
90. Legal problems	1	2	3
91. Concerns about weight	1	2	3
92. Not enough time to do the things you need to do.	1	2	3
93. Television	1	2	3
94. Not enough personal energy	1	2	3
95. Concerns about inner conflicts	1	2	3
96. Feel conflicted over what to do	1	2	3
97. Regrets over past decisions	1	2	3
98. Menstrual (period) problems	1	2	3
99. The weather	1	2	3
100.Nightmares	1	2	3
101.Concerns about getting ahead	1	2	3
102.Hassles from boss or supervisor	1	2	3
103.Difficulties with friends	1	2	3
104.Not enough time for family	1	2	3
105.Transportation problems	1	2	3
106.Not enough money for transportation	1	2	3
107.Not enough money for entertainment and recreation	1	2	3
108.Shopping	1	2	3
109.Prejudice and discrimination from others	1	2	3
110.Property, investments or taxes	1	2	3

Q-1T Look at the numbers on the right of the items you circled. Indicate by circling a 1, 2, or 3 how SEVERE each of the circled hassles has been for you in the past month.

	SEVERITY		
	Some	Moderate	Extreme
111.Not enough time for entertainment and recreation	1	2	3
112.Yardwork or outside home maintenance	1	2	3
113.Concerns about news events	1	2	3
114.Noise	1	2	3
115.Crime	1	2	3
116.Traffic	1	2	3
117.Pollution	1	2	3
HAVE WE MISSED ANY OF YOUR HASSLES? IF SO, WRITE THEM IN BELOW:			
118._____	1	2	3

This next set of questions gives us an understanding of you would describe yourself. A number of statements which people have used to describe themselves are given below. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

Q-2T Read each statement and then circle the appropriate number to the right of the statement to indicate how you generally feel.

	Almost Never	Sometimes	Often	Almost Always
1. I feel pleasant	1	2	3	4
2. I feel nervous and restless	1	2	3	4
3. I feel satisfied with myself	1	2	3	4

Q-2T Read each statement and then circle the appropriate number to the right of the statement to indicate how you generally feel.

	Almost Never	Sometimes	Often	Almost Always
4. I wish I could be as happy as others seem to be	1	2	3	4
5. I feel like a failure	1	2	3	4
6. I feel rested	1	2	3	4
7. I am "calm, cool, and collected"	1	2	3	4
8. I feel that difficulties are piling up so that I cannot overcome them	1	2	3	4
9. I worry too much over something that really doesn't matter	1	2	3	4
10. I am happy	1	2	3	4
11. I have disturbing thoughts	1	2	3	4
12. I lack self-confidence	1	2	3	4
13. I feel secure	1	2	3	4
14. I make decisions easily	1	2	3	4
15. I feel inadequate	1	2	3	4
16. I am content	1	2	3	4
17. Some unimportant thought runs through my mind and bothers me	1	2	3	4
18. I take disappointments so keenly that I can't put them out of my mind	1	2	3	4
19. I am a steady person	1	2	3	4
20. I get in a state of tension or turmoil as I think over my recent concerns and interests	1	2	3	4

This next set of questions involve some behaviors you may engage in on a regular basis. Remember to answer the question based on what you do most often. There are no right or wrong answers. Please work quickly and do not think too long about the meaning of each question.

Q-3T Please answer each question by circling the answer that applies to you most often.

	True	False
1. I avoid using public telephones because of possible contamination.	1	2
2. I frequently get nasty thoughts and have difficulty getting rid of them.	1	2
3. I am more concerned than most people about honesty.	1	2
4. I am often late because I can not seem to get through everything on time.	1	2
5. I don't worry unduly about contamination if I touch an animal	1	2
6. I frequently have to check things (e.g., gas or water taps, doors, etc.) several times.	1	2
7. I have a very strict conscience.	1	2
8. I find that almost every day I am upset by unpleasant thoughts that come into my mind against my will.	1	2
9. I do not worry unduly if I accidentally bump into somebody.	1	2
10. I usually have serious doubts about the simple everyday things that I do.	1	2
11. Neither of my parents was very strict during my childhood.	1	2
12. I tend to get behind in my work because I repeat things over and over again.	1	2
13. I use only an average amount of soap.	1	2
14. Some numbers are extremely unlucky.	1	2
15. I do not check letters over and over again before mailing them.	1	2
16. I do not take a long time to dress in the morning.	1	2
17. I am not excessively concerned about cleanliness.	1	2

Q-3T Please answer each question by circling the answer that applies to you most often.

	True	False
18. One of my major problems is that I pay too much attention to detail.	1	2
19. I can use well-kept toilets without any hesitation.	1	2
20. My major problem is repeated checking.	1	2
21. I am not unduly concerned about germs and disease.	1	2
22. I do not tend to check things more than once.	1	2
23. I do not stick to a very strict routine when doing ordinary things.	1	2
24. My hands do not feel dirty after touching money.	1	2
25. I do not usually count when doing a routine task.	1	2
26. I take a rather long time to complete my washing in the morning.	1	2
27. I do not use a great deal of antiseptics.	1	2
28. I spend a lot of time every day checking things over and over again.	1	2
29. Hanging and folding my clothes at night does not take up a lot of time.	1	2
30. Even when I do something very carefully I often feel that it is not quite right.	1	2

For each item below please answer True of False. Do not spend too much time on any one item. Please answer all 50 questions as honestly as possible. There are no right or wrong answers. Please work quickly and do not think too long about the meaning of each question.

Q-4T Circle 1 for items that are true for you; circle 2 for items that are false for you.

	True	False
1. When I take a new job, I like to be tipped off on who should be gotten next to.	1	2
2. When someone does me wrong I feel I should pay them back if I can, just for the principle of the thing.	1	2

	True	False
3. I prefer to pass by school friends, or people I know but have not seen for along time, unless they speak to me first.	1	2
4. I have often had to take orders from someone who did not know as much as I did.	1	2
5. I think a great many people exaggerate their misfortunes in order to gain the sympathy and help of others.	1	2
6. It takes a lot of argument to convince some people of the truth.	1	2
7. I think most people would lie to get ahead.	1	2
8. Someone has it in for me.	1	2
9. Most people are honest chiefly through fear of being caught.	1	2
10. Most people will use somewhat unfair means to gain profit or an advantage rather than to lose it.	1	2
11. I commonly wonder what hidden reason another person may have for doing something nice for me.	1	2
12. It makes me impatient to have people ask my advice or otherwise interrupt me when I am working on something important.	1	2
13. I feel that I have often been punished without cause.	1	2
14. I am against giving money to beggars.	1	2
15. Some of my family have habits that bother and annoy me very much	1	2
16. My relatives are nearly all in sympathy with me.	1	2
17. My way of doing things is apt to be misunderstood by others.	1	2
18. I don't blame anyone for trying to grab everything he can get in this world.	1	2
19. No one cares much what happens to you.	1	2
20. I can be friendly with people who do things I consider wrong.	1	2
21. It is safer to trust nobody.	1	2

	True	False
22. I do not blame a person for taking advantage of someone who lays himself open to it.	1	2
23. I have often felt that strangers were looking at me critically.	1	2
24. Most people make friends because friends are likely to be useful to them.	1	2
25. I am sure I'm being talked about.	1	2
26. I am likely not to speak to people until they speak to me.	1	2
27. Most people inwardly dislike putting themselves out to help other people.	1	2
28. I tend to be on my guard with people who are somewhat more friendly than I had expected.	1	2
29. I have sometimes stayed away from another person because I feared doing or saying something that I might regret afterwards.	1	2
30. People often disappoint me.	1	2
31. I like to keep people guessing what I'm going to do next.	1	2
32. I frequently ask people for advice.	1	2
33. I am not easily angered.	1	2
34. I have often met people who were supposed to be experts who were no better than I.	1	2
35. I would certainly enjoy beating a crook at his own game.	1	2
36. It makes me feel like a failure when I hear of the success of someone I know well.	1	2
37. I have at times had to be rough with people who were rude or annoying.	1	2
38. People generally demand more respect for their own rights than they are willing to allow for others.	1	2

	True	False
39. There are certain people who I dislike so much that I am inwardly pleased when they are catching it for something they have done.	1	2
40. I am often inclined to go out of my way to win a point with someone who has opposed me.	1	2
41. I am often not in on the gossip and talk of the group I belong to.	1	2
42. The person that had the most to do with me when I was a child (such as a father, mother, uncle, etc.) was very strict with me.	1	2
43. I have often found people jealous of my good ideas, just because they had not thought of them.	1	2
44. When a person is with someone of the opposite sex, that person is usually thinking about things related to sexual activity.	1	2
45. I do not try to cover up my poor opinion or pity of a person so that the person won't know how I feel.	1	2
46. I have frequently worked under people who seem to have things arranged so that they get credit for good work but are able to pass off mistakes onto those under them.	1	2
47. I strongly defend my own opinions as a rule.	1	2
48. People can pretty easily change me even though I thought that my mind was already made upon the subject.	1	2
49. Sometimes I am sure that other people can tell what I am thinking.	1	2
50. A large number of people are guilty of bad sexual conduct.	1	2

Individuals who experience pain develop different ways to respond to that pain. We would like to know what you do or think about when in pain. Please use the rating scale below to indicate how often you engage in each of the following thoughts or activities.

Q-5T Circle any number from 0 "never" to 5 "always" for each item.

	Never					Always
1. I think that if my pain gets too severe, it will never decrease...	0	1	2	3	4	5
2. My mind is calm when I am in pain.....	0	1	2	3	4	5
3. When I feel pain, I try to stay as still as possible...	0	1	2	3	4	5
4. I become sweaty when in pain.....	0	1	2	3	4	5
5. When I feel pain I am afraid that something terrible will happen	0	1	2	3	4	5
6. My thoughts are agitated and keyed up as pain approaches	0	1	2	3	4	5
7. I go immediately to bed when I feel severe pain...	0	1	2	3	4	5
8. Even though it hurts, I know that I'm going to be OK	0	1	2	3	4	5
9. My body gets shaky when I hurt.....	0	1	2	3	4	5
10. I feel disoriented and confused when I hurt.....	0	1	2	3	4	5
11. When pain gets severe, I call my doctor or go to the emergency room...	0	1	2	3	4	5
12. I begin trembling when engaged in an activity that increases	0	1	2	3	4	5
13. When I feel pain, I become afraid of dying.....	0	1	2	3	4	5
14. I can't think straight when in pain.....	0	1	2	3	4	5
15. I will stop any activity as soon as I sense pain coming on	0	1	2	3	4	5
16. Even if I do an activity that causes pain, I know it will decrease later.....	0	1	2	3	4	5
17. Pain seems to cause my hear to pound or race....	0	1	2	3	4	5
18. I think I have a serious medical problem my physician has failed to uncover...	0	1	2	3	4	5
19. As soon as pain comes on, I take medication to reduce it.....	0	1	2	3	4	5

Q-5T Circle any number from 0 "never" to 5 "always" for each item.

	Never					Always
20. I have pressure or tightness in my chest when in pain.....	0	1	2	3	4	5
21. When I feel pain I think that I might be seriously ill.....0		1	2	3	4	5
22. During painful episodes it is difficult for me to think of anything besides the pain.....	0	1	2	3	4	5
23. I avoid important activities when I hurt.....	0	1	2	3	4	5
24. When I sense pain, I feel dizzy or faint.....	0	1	2	3	4	5
25. Pain sensations are terrifying.....	0	1	2	3	4	5
26. When I hurt, I think about the pain constantly...	0	1	2	3	4	5
27. I take medication if I need to do something that usually increases pain...	0	1	2	3	4	5
28. I have trouble catching my breath when I have pain sensations	0	1	2	3	4	5
29. I dread feeling pain.....	0	1	2	3	4	5
30. I am bothered by unwanted thoughts when I am in pain	0	1	2	3	4	5
31. If a chance comes to do something I enjoy, I do it even if it causes pain....	0	1	2	3	4	5
32. Pain makes me nauseous.....	0	1	2	3	4	5
33. I might become paralyzed or more disabled.....	0	1	2	3	4	5
34. I find it hard to concentrate when I hurt.....	0	1	2	3	4	5
35. I seek reassurance that I am OK during times of more severe pain...	0	1	2	3	4	5
36. I find it difficult to calm my body down after periods of pain	0	1	2	3	4	5
37. I worry when I am in pain.....	0	1	2	3	4	5
38. My stomach bothers me when I experience pain.....	0	1	2	3	4	5
39. I try to avoid activities that cause pain.....	0	1	2	3	4	5
40. I can think pretty clearly even while experiencing severe pain	0	1	2	3	4	5

Appendix I

Treatment Expectations Questionnaire

Please answer the following questions as honestly as possible. Do NOT put your name on this form. This will insure that your answers will be kept entirely confidential. No one in this project will know who completed this form. The code on top of the form is to insure that all the information you submit is kept together.

1. How logical does this type of treatment seem to you?

1	2	3	4	5	6	7
not at all logical						extremely logical

2. What is the likelihood that this treatment will decrease your pain?

1	2	3	4	5	6	7
not at all likely						extremely likely

3. What is the likelihood that this treatment would decrease <u>most people's</u> facial pain?

1	2	3	4	5	6	7
not at all likely						extremely likely

4. What is the likelihood that this treatment will improve <u>your</u> ability to cope with facial pain?

1	2	3	4	5	6	7
not at all likely						extremely likely

5. How likely is it that this treatment would improve most people's ability to cope with facial pain?

1	2	3	4	5	6	7
not at all likely						extremely likely

6. How confident are you that you will be able to learn the techniques described in this treatment program?

1	2	3	4	5	6	7
not at all confident						extremely confident

7. How knowledgeable do you feel the therapist is regarding the treatment of facial pain?

1	2	3	4	5	6	7
not at all knowledgeable						extremely knowledgeable

8. How similar is this treatment program to what you had expected?

1	2	3	4	5	6	7
not at all similar						extremely similar

9. How confident would you be in recommending this treatment to a friend who had facial pain?

1	2	3	4	5	6	7
not at all confident						extremely confident

Appendix J

Facial Pain Treatment Rating Form

Please **DO NOT** put your name on this form. Your therapist will NOT see this form and your answers to the following questions will remain completely confidential. The Questions on the following pages are designed to help us evaluate our treatment program. Please give your honest feedback so that we might improve the treatment for future participants.

1. How would you rate your overall level of satisfaction with the treatment you received?
    1. very dissatisfied
    2. dissatisfied
    3. neither satisfied nor dissatisfied
    4. satisfied
    5. very satisfied

2. How would you rate the overall success of your treatment?
    1. not at all successful
    2. somewhat successful
    3. moderately successful
    4. very successful
    5. extremely successful

3. In general, how are you doing now compared to when you started treatment?
    1. worse now
    2. no change
    3. a little better
    4. moderately better
    5. much better

4. How confident would you be in recommending this treatment to a friend that had facial pain?

1	2	3	4	5	6	7
not at all confident						extremely confident

5. How likely is it that this treatment would decrease Most People's facial pain?

1	2	3	4	5	6	7
not at all likely						extremely likely

6. How likely is it that this treatment would improve Most People's ability to cope with facial pain?

1	2	3	4	5	6	7
not at all likely						extremely likely

7. How knowledgeable do you feel that the therapist was in the application of this treatment for facial pain?

1	2	3	4	5	6	7
not at all knowledgeable						extremely knowledgeable

8. How similar is this treatment program to what you had expected?

1	2	3	4	5	6	7
not at all similar						extremely similar

9. How likely is it that this treatment will improve your ability to cope with pain in the future?

1	2	3	4	5	6	7
not at all likely						extremely likely

For items 10 and 11 below, make your ratings based on your experiences UP TO THIS POINT.

10. How helpful have you found each of the techniques below, **In General**? Please use the following scale:

1	2	3	4	5	6	7
not at all helpful						extremely helpful

Relaxation Tape (PRT): _____
Deep Breathing: _____
Facial Exercises: _____
Using Other Behaviors to Replace Oral Habits: _____
Simple Record Keeping of Oral Habits: _____
Visualizing Relaxing Scenes: _____
Grinding Teeth Before Going to Bed to Increase Oral Habit Awareness: _____
Learning How to Avoid a Relapse: _____
Other Techniques to Become more aware of Oral Habits: _____

11. How helpful have you found each of the techniques below **In Reducing Your Pain**? Please use the following scale:

1	2	3	4	5	6	7
not at all helpful						extremely helpful

Relaxation Tape (PRT): _____
Deep Breathing: _____
Facial Exercises: _____
Using Other Behaviors to Replace Oral Habits: _____
Simple Record Keeping of Oral Habits: _____
Visualizing Relaxing Scenes: _____
Grinding Teeth Before Going to Bed to Increase Oral Habit Awareness: _____
Learning How to Avoid a Relapse: _____
Other Techniques to Become more aware of Oral Habits: _____

For items 12 and 13 below, make your ratings based on your <u>EXPECTATIONS ABOUT THE FUTURE</u>.

12. How helpful do you think you will find each of these techniques in improving **your quality of your life in general?** Please use the following scale:

1	2	3	4	5	6	7
not at all helpful						extremely helpful

Relaxation Tape (PRT): _____
Deep Breathing: _____
Facial Exercises: _____
Using Other Behaviors to Replace Oral Habits: _____
Simple Record Keeping of Oral Habits: _____
Visualizing Relaxing Scenes: _____
Grinding Teeth Before Going to Bed to Increase Oral Habit Awareness: _____
Learning How to Avoid a Relapse: _____
Other Techniques to Become more aware of Oral Habits: _____

13. How helpful do you think you will find each of these techniques in managing your pain? Please use the following scale:

1	2	3	4	5	6	7
not at all helpful						extremely helpful

Relaxation Tape (PRT): _____
Deep Breathing: _____
Facial Exercises: _____
Using Other Behaviors to Replace Oral Habits: _____
Simple Record Keeping of Oral Habits: _____
Visualizing Relaxing Scenes: _____
Grinding Teeth Before Going to Bed to Increase Oral Habit Awareness: _____
Learning How to Avoid a Relapse: _____
Other Techniques to become more aware of Oral Habits: _____

14. To what extent do you think your oral habits play a role in your facial pain?

1	2	3	4	5	6	7
least important role						most important role

15. To what extent are you more aware of the oral habits you engage in?

1	2	3	4	5	6	7
no more aware						much more aware

16. To what extent have you decreased the overall frequency of your oral habits?

1	2	3	4	5	6	7
no reduction						complete reduction

17. How successful do you believe you will be in reducing the overall frequency of your oral habits in the future?

1	2	3	4	5	6	7
not at all successful						completely successful

18. Please rate your therapist on the following scales:

1	2	3	4	5	6	7
cold / disinterested						warm caring
1	2	3	4	5	6	7
passive						actively involved
1	2	3	4	5	6	7
lacking knowledge						very knowledgeable

19. Please use the following lines to give us your personal feedback regarding the treatment program or your therapist, e.g. Please comment on the things you liked about the program, the things that you didn't like, the pace of the treatment program, any changes that you think would make the treatment program better in the future, etc.

Appendix K

Outline Session 1:

Face-to-Face Pre-treatment Orientation

1. Introductions
2. Explanation of Stress-Reactivity Assessment
    a) Pain measures
    b) Stress measures

3. Background of Our Treatment Team
    a) Experience of Team with Treatment of Facial Pain
        1) 2 previous treatments
        2) Published successful results
    b) Training/Competence of Therapists
        1) Advanced graduate students, all have masters degrees
        2) 3+ years of experience w/ chronic pain
        3) Co-therapist for prior treatment
4. Previous Studies
    a) Many different types of people in treatment
    b) Very successful in reducing pain
    c) Modifications for flexibility
5. Background of treatment
    a) Treatment works on reducing behaviors that can cause or contribute to facial pain
        --clenching, grinding, etc.
    b) Also work on reducing general muscle tension in the face and body
    c) Provide a repertoire of behaviors to address muscle tension and stress

6. Expectations of Treatment
    1) Treatment consists of 7 Lessons to be completed at home
    2) Client is asked to complete one lesson per week
    3) Should failure or unforeseen problems result in delays, we'll extend treatment as needed.
    4) Weekly e-mail or phone contact to monitor progress, assist with problems or questions, assess completion of material, etc.
    5) Simple quiz for each chapter to ensure knowledge of material
    6) Treatment should be completed by 7 weeks, but definitely no longer than 12 weeks total
    7) Three measures send in weekly (via e-mail or in envelopes we provide)
7. Recording Procedures
    1) Immediate Treatment Group

a) Take-home Questionnaires:
b) Mail Weekly Questionnaires
c) Distribute treatment manual (1st session will be mailed next week)

2) 7 Week Delayed Treatment Group
a) Take-home Questionnaires:
b) Mail Weekly Questionnaire

8. Collect Deposit
1) Deposit is a way to increase people's motivation to complete treatment, as individuals that complete treatment gets the most successful outcome
2) $80 Deposit (two checks for $40 each) made payable to the Behavioral Health Institute
3) We WILL NOT cash your checks but hold onto them and give them back
4) Terms of Refund
a) One check of $40 given back after we receive information from week 4
c) Last check of $40 given back after post-treatment assessment

Delayed Treatment Explanations:

Because of demand for our treatment and because this is a research project we can only allow a certain number of individuals into treatment at one time. We guarantee treatment to everyone, and you will be given FREE treatment. It will take 7 weeks until we have an opening in treatment however. By the end of 7 weeks we will have refined our treatment even further, and have a better treatment. Until then we will keep in touch with you to monitor your facial pain (with weekly phone / e-mail contact) and have you complete a weekly pain diary to monitor your level of pain. This information if very important to us, to track your level of pain without treatment. We use this information to see how your level of pain changes before, during and after treatment. You will start treatment in 7 weeks.

***Deposit: We still want people to put down a deposit as a sign of commitment to treatment. When people commit to treatment they tend to get better results.

Appendix L

Informed Consent Form

Title of Research: Treatment of TMD Using a Habit Reversal Treatment in a Minimal Therapist Contact Format.

Investigators: Sandy Gramling, Ph.D., LCP, Associate Professor
Don Townsend, M.A., Clinical Graduate Student
Rob Nicholson, B.S., Clinical Graduate Student

Introduction: Previous research has shown that lifestyle factors such as environmental challenges and stress can play a role in the development and maintenance of facial pain. A number of treatment options have proven to be effective in reducing the number and intensity of pain episodes when provided on an individual basis. Treatments utilizing self-help manuals have also been demonstrated to be effective in pain management. This study attempts to compare individuals who received the habit reversal treatment with individuals who did not receive treatment.

If you choose to participate in this study you will be asked to complete several questionnaires, attend a psychophysiological assessment, participate in treatment program, and complete the post-treatment assessment. This treatment program is designed to improve overall stress management, reduce maladaptive oral habits, improve facial posture, and reduce muscle tension and episodes of pain.

Benefits: If you agree to participate in this study you will receive new skills to manage stress and pain episodes.

Risks, Inconvenience, Discomfort: There are virtually no risks and treatment is provided free of charge. Participation will require you to spend time completing questionnaires, attending two assessment sessions, keeping records, reading homework lessons, and practicing various skills.

Cost of Participation: There is no monetary cost associated with this study. Your participation will require an initial deposit of $80 for treatment, which will be fully refunded to you in two separate installments, one after completion of lesson 4 and, the remainder at the completion of the post-treatment assessment. There are 7 individual lessons, which require some additional work (approximately 1-2 hours between each lesson). You will also be required to take time to complete several questionnaires and come to the psychology lab for two assessments.

Research Related Injury: I understand that in the event of any physical and/or mental injury resulting from my participation in this research project, Virginia Commonwealth University will not provide compensation.

Confidentiality of Data: The results of participation in this study will be confidential and will not be released unless required by law or with the fully informed written consent of participants. Any presentations or publications that result from this study will be presented as group statistics, thereby insuring that the identity of individual participants are completely obscured. All information gathered as a function of this study will be kept strictly confidential. All material will be kept in locked filing cabinets. There are limits to confidentiality where your therapist is required by law to reveal information without your consent. These situations are as follows: 1) If a court of law subpoenas your records, 2) If you are judged to be an immediate danger to yourself or another person, 3) If there is reason to suspect child abuse.

Withdrawal: Participants are free to withdraw from this study at anytime. If you do not complete the treatment however, all or part of your deposit for therapy will be forfeit. You have the right to refuse specific techniques or to ask questions about methods used in the treatment. All additional questions regarding this study will be answered by the therapists/investigators.

I have read and understand the information provided above. The nature and purpose of this research has been satisfactorily explained to me. By signing below, I consent to participate in this study and acknowledge that my participation is entirely voluntary. A copy of this form will be provided at my request. For questions or concerns related to this study, I may contact Sandy Gramling, Ph.D., LCP at (804) 828-8795 or Don Townsend at (804) 828-1867.

_____
(Print Your Name)

_____ _____
(Your signature) (Date)

_____ _____
(Witnesses signature) (Date)

Appendix M

Outline of Treatment Lessons

Lesson 1:
- Reminder to send in weekly assessment material
- Introduction of treatment and building credibility,
- Overview and rationale of the treatment program,
- Information about the effects of stress on the body,
- Role of oral habits in producing facial pain,
- Instructions in monitoring oral habits. Present a recording sheet for oral habits and problem solve methods to keep records inconspicuously while emphasizing the importance of good record keeping.

Lesson 2:
- Reminder to send in weekly assessment material
- Question review and troubleshoot problems that the client may be having with record keeping,
- Learn deep breathing exercise,
- Written Description of individual oral habits

Lesson 3:
- Reminder to send in weekly assessment material
- Question review and troubleshoot problems that the client may be having with record keeping,
- Illustrate and practice the facial exercises,
- Review description of oral habits, elaborate situations where the behaviors are likely to occur. This includes when, where, with whom, etc., stressful situations.

Lesson 4:
- Reminder to send in weekly assessment material
- Question review and troubleshoot problems that the client may be having with record keeping,
- Develop additional competing responses for oral behaviors, mouth closed w/ teeth not touching, etc.,

- Practice facial exercises,
- Concept or competing responses (must occur immediately after oral habit occurs)
- Utilize negative practice to enhance awareness of maladaptive oral habits,

Lesson 5:

- Reminder to send in weekly assessment material
- Question review and troubleshoot problems that the client may be having with record keeping,
- Practice competing responses,
- Practice engaging in oral habit and then switching to competing response in non-stressful situations,
- Role play the use of competing responses in stressful situations

Lesson 6:

- Reminder to send in weekly assessment material
- Question review and troubleshoot problems that the client may be having with record keeping,
- Troubleshoot problems encountered using competing responses
- Reinforce the use of deep breathing and facial exercises as incompatible with oral habits in stressful situations,

Lesson 7:

- Reminder to send in weekly assessment material
- Question review and troubleshoot problems that the client may be having with record keeping,
- Reinforce successfully using competing responses in stressful situations,
- Troubleshoot problems encountered using competing responses
- Review of past 6 lessons and ask for feedback;
- Emphasize that the techniques we discussed are skills and must be practiced;
- Discuss relapse prevention,
- Explanation and schedule of follow up assessment.

Appendix N

TMD Treatment Manual

Facial Pain Coping Skills Training

by
Sandra E. Gramling, Ph.D.

LESSON ONE

I. Procedures: (You can check these off as you go).

- Complete Treatment Expectations Form and Send in separate envelope,
- Read lesson 1,
- Practice exercises,
- Complete Weekly Pain Diary and Oral Habits Diary
- Contact the therapist on a weekly basis to ask any questions or discuss problems with the lesson or material,
- Take the short quiz on lesson 1,
- Mail in Weekly Pain Diary and Quiz #1.
- Proceed to lesson 2.

II. Lesson Objectives:

1. Complete Treatment Expectations Questionnaire
2. Background on the therapists,
3. Insuring Your Confidentiality,
4. Introduction to our facial pain treatment,
5. Learn about how stress affects the body,
6. Learn how oral habits contribute to producing facial pain,
7. Rational for how the habit reversal intervention works,
8. Different patterns of coping with stress,
9. Learn how to record oral habits and how to complete the Oral Habits Diary,
10. How to keep good records and why it's important!!

III. Lesson Material:

You should have all the following material in your manual.

1. Weekly Facial Pain Diary
2. Oral Habits Diary
3. Oral Habits Frequency Card
4. Pre-treatment Rating Form w/ separate envelope (do not put your name on this).

❶ Complete the Treatment Expectations Questionnaire

Enclosed in the supplemental packet you will find the Treatment Expectations Questionnaire. This is a questionnaire designed to examine your expectations regarding this treatment program now that we've had a chance to meet with and provide you with a treatment overview. To help us improve our treatment in the future, it is important for us to find out how well we presented the treatment and how well we met your expectations. At the end of the treatment we will ask you similar questions to see how we did. We need you to be honest and truthful when answering these questions and so we ask that you DO NOT put your name on the questionnaire. This is to insure that you can complete the questionnaire very truthfully, with confidence that we will not have knowledge of who completed it. The only information that will be on the form is an identification number to insure that all the information with the same number gets kept together. All your forms and questionnaires that you complete will have the same identification number on them, and not your name. This will help to preserve your confidentiality. Please return the questionnaire in the envelope provided.

❷ Introducing the Therapists

There are several therapists providing treatment in this study. The therapist who you will be working with during the next seven weeks is an advanced graduate student in clinical psychology. All therapists have their master's degree and are currently working towards their Ph.D. in clinical psychology. All therapists have had several years of supervised therapy experience. The team of therapists working on this treatment study has also had many years of experience working with individuals with chronic facial pain.

Dr. Sandra Gramling, who developed your treatment program along with the therapists, will personally supervise all the work conducted by the therapists in this treatment program. Dr. Gramling has treated chronic pain patients for over 15 years. She and members of the treatment team have conducted both individual and group treatments for individuals with chronic

facial pain. Previously, the treatment you are receiving has been shown to be successful at treating individuals with chronic facial pain (Gramling, Grayson, Neblett & Townsend, 1996). Since its development, Dr. Gramling has published several articles on the success of the habit reversal treatment program, with the latest article co-authored by members of the treatment team.

In addition to their experience working with chronic pain, members of the treatment team are all familiar with stress management techniques. They are well versed in the principles of stress management and have regularly utilized these techniques with clients during their work at the Center for Psychological Services and Development over the past few years. Dr. Gramling has written a textbook and a workbook on stress management and all members of the research team have experience facilitating stress management training.

❸ Insuring Your Confidentiality

Treatment involves a confidential relationship between the you and the therapist and is thus protected by law. Therefore, information that you provide us regarding your facial pain and stress in you life is confidential. This means that we will not give out any information that could identify you as a participant in the treatment program or release any information to anyone without your written consent. The results of your participation in this study will be confidential and will NOT be released unless required by law or with your fully informed written consent. Any presentations or publications that result from this study will be presented as group statistics, thereby insuring that your identity will be completely obscured. All information gathered during this study will be kept strictly confidential. All phone calls and written correspondence will be stored in your file, while e-mail will be deleted from the computer (if you utilize e-mail for corresponding between lessons) following treatment. All personal information will be kept in locked filing cabinets.

There are, however, limits to legal confidentiality, where your therapist is required by law to reveal information without your consent and

we are required to make you aware of these limitations to confidentiality. With the exception of these situations, all information will remain completely confidential.

These situations are as follows:

1) If a court of law subpoenas your records,
2) If you are judged to be an immediate danger to yourself or another person,
3) If there is reason to suspect child abuse.

❹ Introduction to the Facial Pain Treatment Program

Research reveals that even persons with radiographic (x-rays) evidence of joint deterioration show as much improvement after our treatment as those whose facial pain is thought to be entirely associated with the muscles surrounding the jaw. Most people improve at least somewhat from our treatment, and many report moderate to almost full relief from pain.

Our approach to the treatment of facial pain is different from the standard medical treatments. More specifically, typical medical management usually consists of an oral appliance (bite guard), medication, or even surgery to relieve pain. Doctors and other health professionals provide the treatment for the individual with facial pain, while the individual 'receives' the treatment and generally does very little to assist in the process.

In contrast, our model relies on a collaborative approach to the treatment of facial pain; one where the therapist and the individual work together. Our treatment relies on teaching you how to manage your own facial pain to gain some level of control over the frequency and intensity of pain episodes. We will be teaching you to recognize patterns of your pain in order to relieve existing pain and eventually prevent your pain before it starts. In addition, the types of skills that we will be teaching you should be useful in many areas of your life. Specifically, you will learn to be more aware of tension inducing habits that physically stress the muscles of your

jaw and face. You will also learn to stop or interrupt oral habits and you will learn specific muscular relaxation techniques.

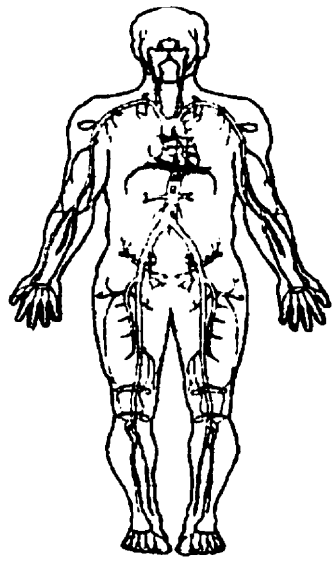
It is important to realize that although we are psychologists, and not physicians or dentists, and that we emphasize the role that stress may have on your symptoms, we are very well aware of the underlying physical causes of your disorder and the negative impact that your disorder has on your quality of life. Stress management does NOT assume that your pain is purely psychological (it's not all in your head). Stress often has dramatic physical effects on the body, described in the next section.

5 Stress and It's Effects on the Body

The human body reacts to threatening situations with a set of essentially pre-programmed responses. These responses are commonly referred to as the "fight/flight" or "stress" response. The stress response includes increased muscle tension, increased heart rate, heart output, blood pressure, increased brain excitability, decreased blood flow to the body extremities, release of stomach acid, etc. Nature designed these responses to help humans survive threats that were physical, short in duration, and easy to identify. To the extent that modern threats (stress) are similar to those that faced primitive man (i.e. a mugging, escaping a burning building) the stress response can still help the person deal with a stressful situation or "cope". These acute or short-term threats to the physical self do still occur. However, chronic, psychological threats (threats to self-esteem) tend to be more common today. They also tend to be more subtle and difficult to respond to.

Threats to self-esteem occur when the threat is not directed in a physical manner but instead threatens the persons self image. For example, if you like your job and your supervisor gives you a less than flattering evaluation you might feel irritation and pressure to perform despite the feeling you were doing a "good" job. The bad evaluation threatens the image you have of yourself as a good worker. Modern stress also tends to last longer. For example, financial pressures can last for years. So can a bad

marriage or work situation. This type of stress results in the body being kept in a constant state of "high gear" or tension, where the body is ready to respond. No system (mechanical or biological) can stay in high gear indefinitely. Parts wear down and damage occurs. Finally, it is often difficult to identify sources of stress. Stress can come from sources as diverse as pollution, neighborhood crime, to drug abuse problems in the family. Often things that effect what you find stressful are numerous, inter-related and difficult to control.



By way of example, let's see how the stress response can damage the body over a prolonged period of time. When the cardiovascular system (which includes the heart, veins, arteries, and capillaries) increases its activity, greater pressure and strain is placed on the entire systems as more blood is pushed with greater force through the tube-like veins. While veins are somewhat flexible and elastic, with repeated stretching and tightening they become cracked and brittle. This condition is called arteriosclerosis. With regards to facial pain, the experience of stress results in chronically tightened muscles. This happens with teeth clenching. As anyone who has over-exercised knows, muscles become sore with extensive use. Additionally, when the body hurts the person tends to favor that painful part of the body, which in turn puts more strain on other parts of the body. For example you may chew more often on the side of your face that is least painful. The result is chronic facial pain. Skills that help you to control the stress response and stress behaviors are critical to this program. The goal is

to better control the stress response and specific stress behaviors and thoughts by learning more about what factors contribute to the problem and teaching methods for regulating your response to stress.

6 Teeth Clenching, Teeth Grinding and Other Oral Habits and their Relationship to Facial Pain

A. Treatment model.

This treatment program is based on a well documented model of facial pain which suggests that stress-induced increases in physiological arousal (increased levels of tension in the masseter muscles, increased responsivity of the endocrine system) cause pain in the masseter muscles and temporomandibular joint. In addition, there is growing evidence that facial pain patients develop what has been called "oral habits", which put excessive strain on the facial muscles and leads to pain. Some examples of oral habits include behaviors such as clenching and grinding your teeth, moving your jaw from side to side or thrusting your jaw outward, chewing on your hair, pens, and other non-edible objects, and chewing gum. By now, most of you have completed the pre-assessment exercise in the laboratory. The results from this exercise provide a good example of how the facial pain model works. The competitive task was designed to parallel "real life" stressors (e.g., waiting in line at the bank when you need to get back to work, waiting in slow traffic) which increase stress level and arousal. As a result, the likelihood that individuals engage in oral behaviors increases as well. Prior research has shown this type of task elicits oral habits in TMD patients. We found that when people were engaged in this task, both the number of oral habits (e.g., jaw clenching, teeth grinding) and muscle hyperactivity increased. This type of behavior pattern leads to facial pain. With the skills that we will be learning in the treatment program, we will be working to break this pattern in the early stages to alleviate facial pain.

B. The General Habit Reversal Model that Guides Our Treatment Program.

The main premises of our program are as follows:

1. We believe most facial pain sufferers knowingly or un-knowingly engage in various oral habits that increase muscle tension and lead to facial pain.
2. Our program is designed to teach you specific skills to detect and reverse maladaptive oral habits such as teeth clenching and grinding.

3. You will also learn general relaxation skills which will help you be more aware of the level of tension in your muscles and make it easier for you to detect when you engage in the types of oral habits that increase tension.

4. We believe that participants can learn and implement these skills and by achieving this goal, will allow them to alleviate facial pain.

7 How Does the Habit Reversal Model Work?

People often engage in habits that they are unaware of. Therefore the key to breaking a habit is becoming aware of the habit and the situations in which the habit occurs. Once aware of a habit then you can do something else (something incompatible with the habit) in place of the habit in order to stop the unwanted behavior. Our treatment program begins by teaching you exercises that increase awareness of the habit. Awareness training is taught in conjunction with deep breathing exercises and relaxation techniques. As you become more aware of your oral habits and the situations in which they occur, you will use specific facial exercises and deep breathing as competing responses each time you "catch" yourself in your oral habit. In this way you will be able to break your oral habits.

8 Coping With Stress

The stressors that you encounter may be out of your control, but the techniques that we will teach you, such as deep breathing and relaxation techniques, will help give you control over your emotional and physiological responses to stress. When you have control over how your body responds in

given situations, no person or situation can have the power to make you tense unless you give that power away. Therefore, you are literally giving yourself a headache, making yourself tense when you try to control a situation that is outside of your control, for example, when you get upset with the way other people drive, or waiting in line at the bank, etc. You may not be able to control the situation, but you can always regulate your emotional & physiological response to that stressful situation. People often make themselves tense and upset by worrying about things that they can't really do anything about. A lot of times we think that situations make us get upset, but its really our beliefs, perceptions or interpretations about the situation that make us upset. Almost all of the techniques we will cover will increase your ability to manage and regulate your own stress response and general level of ongoing tension.

9 Monitoring Your Oral Habits

The following pages include your Oral Habits Recording Sheet and an example of how to complete the Oral Habits Recording Sheet.

Often, you are not aware of little things you do that may increase tension and lead to pain until you actually feel the pain. Different people engage in a variety of oral behaviors that can ultimately lead to facial pain; some clench their teeth, some bite their fingernails, tense the muscles of their jaws, bite their lips or the inside of their cheeks, etc. The first key to stopping these preceding behaviors is to become aware of them. The second key is to figure out when these habits occur. Most oral habits occur in at least two different types of situations: 1) absentmindedly, and 2) during stress.

The purpose of the Oral Habits Recording Sheet is to record events that pertain to your oral habits and facial pain. This is not the kind of diary that you write down random thoughts, concerns, or wishes before you retire at night. Instead, we want you to record events that happen before, during, and after your oral habits and facial pain, as they occur throughout the day. As soon as you notice that an oral habit is occurring (or has occurred), make note of it, as well as any events that happened before (antecedents) and after

(consequences). As you write, try to answer the questions: Who? What? When? Where? and Why? Describe the situation, what you were thinking, feeling or doing, and what others were doing. Try to make an entry as soon as the behavior occurs; trying to reconstruct the event later may overlook important details that could have uncovered identifiable patterns. In addition, rate the intensity of feelings (including the pain) using Subjective Units of Distress (SUDS). A SUDS scale rates intensity on a scale of 1-10 with 1 being no facial pain or no emotional distress, and 10 being incapacitating pain or severe distress. To help you understand the types of information that we are looking for, we have attached an example Oral Habits Recording Sheet.

Oral Habits Recording Sheet

Day / Time	Antecedents	Behaviors-Actions Thoughts/Emotions	Consequences

Under the consequence section of each event, add a SUDS rating. **SUDS**= Subjective Units of Distress: On a scale from 1 to 10, rate the intensity of your feelings (including pain). 1= no distress or facial pain while 10=severe distress or incapacitating pain.

Oral Habits Recording Sheet
(Example)

Day / Time	Antecedents	Behaviors-Actions Thoughts/Emotions	Consequences
Tues. morning 7:30 a.m.	Driving to work when I hit a back-up at the toll plaza.	Tapping the wheel, clenching my teeth, thinking I will be late for work.	Feeling tension and pain in my jaw. Feeling the start of a headache.
Wed. afternoon	Behind with the days work. Boss gives me more work that is due today	Feeling that I will have to work late again. Why is she doing this to me again.	tension in my neck and shoulders, facial pain is becoming worse, jaw is killing me.
Wed. 7pm	At home watching TV.	chewing on my fingernails. Think Why am I doing this?	noticed I was chewing on my nails so I stopped

Under the consequence section of each event, add a SUDS rating. **SUDS**= Subjective Units of Distress: On a scale from 1 to 10, rate the intensity of your feelings (including pain). 1= no distress or facial pain while 10=severe distress or incapacitating pain.

⑩ How to Keep Good Records and Why It's Important

During the upcoming week, you will need to record a couple different things. You will need to record your oral habits, as previously discuss. You will also be asked to record how much pain you are in on a daily basis. It also helps us to monitor possible patterns of pain. We ask that you record your facial pain four times daily. The purpose of this procedure is to get an accurate estimate of how much pain you have, to monitor progress in treatment, and to help us to determine the effectiveness of our treatment program. Please refer to the information that you were given initially for a copy of the Facial Pain Diary Instructions. If you have any questions completing this form, please contact us as soon as possible.

There are several methods that you can use to make record keeping as easy as possible. Here are several suggestions. If you still have problems with record keeping, ask the therapist either during the weekly correspondence time or anytime you have a chance to call or e-mail him.

A. Make record keeping as convenient as possible.

If recording keeping is not convenient, or is very difficult for you to do, you probably won't do it, or won't do a very good job of keeping records. Therefore, it's important to try to figure out the best way to keep records for you. Some helpful hints might include the following:

- Put your pain diary on the refrigerator. This will help you remember the times that you are supposed to record your pain. Then you will need to only record your lunch time pain level at work, and add that to the record when you get home.

- Keep a note card at your desk at work, or in your pocket so that you can quickly recording oral behaviors right after they occur. We will supply you with some note cards that you can use for this purpose.

- If this is still too obvious during meetings, or at work, keep some pennies or something similar in your pocket. Then when you engage in an oral behavior, shift a penny from one pocket to the other. Then, when you have access to your record sheet, count up the pennies and record the number on the record sheet.

B. Strive for a balance between accuracy and convenience.

Try to keep the best records possible without creating a major stressor out of it. Remember that one of the goals of this program is to reduce oral habits and stress, and not create more stress. So the key here is to find a system of record keeping that works into your busy schedule. Therefore, remember that although we want you to do the best job you can keeping records, we don't want you to 'stress out' over it. Do the best you can keeping records, but you can't keep track of everything, so don't worry too much about it.

C. How confident are you?

Estimate how confident you are that you can keep good records. On a scale from 0% to 100% confidence, how confident are you that you can keep good records given what you know about the program and how to keep records? _____

If your estimate was less that 75%, we need to help you to figure out a better way to keep records. What you want to do now, is problem solving with the therapist. Talk with the therapist as soon as possible about how to keep better records, and how to make it more convenient for you. Good record keeping doesn't have to be difficult, time consuming or interrupt your life.

D. Potential Problems.

What do you think will be potential problems that you might encounter during record keeping and practicing the weekly exercises? List them below:

Many people can anticipate potential roadblocks to home practice (e.g., not enough time, absence of a quiet setting, fear of going to sleep, fear of increasing "crows feet" or other facial lines, others might think it's silly, etc.). But there are solutions to each of these, and other potential concerns that you might have for not being able to practice the exercises at home.

Now what we want you to do is to try and find solutions to these problems. How do you think that you can overcome these problems? List the possible solutions below:

If you have difficulty finding solutions to these problems, please contact the therapist as soon as you can. He will help you to find the best ways to practice these exercises in your busy schedule.

PRACTICE EXERCISES
LESSON ONE

This week you have several practice exercises to complete. These assignments are designed to increase your awareness of the various situations in which you engage in oral habits that result in pain.

1. **Pain Diary** - Your first assignment every week will be to continue to fill out the facial pain diary. Again, most people find it most convenient to fill this out when they first wake up, at lunch, at dinner, and when they go to bed. If you are having any trouble with the diary, please let us know so that we can get you on track as quickly as possible.

2. **Oral Habits Diary** - Try to use your oral habits diary on a daily basis. The instructions and an example are in your lesson.

3. **Oral Habits Frequency Card** - You have been provided with a 3x5 card to use during the week to monitor the frequency of your oral habits. Date the card and simply make a slash mark on the card each time you realize that you're engaging in one of your oral habits.

Recording Hint: Sometimes you will catch yourself at a time that is not convenient for recording. Develop a system to help you keep track such as starting the day with pennies in your left pocket and none in your right pocket. During the day move a penny from your left pocket to your right pocket each time you catch yourself but for some reason cannot record it on your sheet. When its convenient, take out the pennies in your right pocket, count them, make that many marks on your sheet and put the pennies back in your left pocket and start all over. This is just one idea to keep recording simple and making a plan that works for you.

Important Note: It is important to note that you do not have to complete these assignments "perfectly". Do the best you can without letting it become a major stressor. We will examine any problems you had during the next phone call or e-mail contact. If you need help before then, do not hesitate to contact the therapist.

Assessment for Chapter 1

Please respond to the following questions regarding material from Chapter 1 of the Facial Pain Treatment Manual by answering 'True' or 'False' below the question and then mailing the material back to us along with the weekly pain diary.

1. Individuals can profit from this treatment program even if their facial pain is due to joint deterioration or disorder.

2. Our treatment program centers on 'curing' you of your facial pain. That is, you will just sit back and let us do all the work.

3. Stress affects the body by increasing blood pressure, muscle tension, increased heart rate, releasing stomach acid, etc.

4. The two kinds of threats to an individual (that produce stress) can be described as 'real' physical threats, and 'imaginary' or made-up threats.

5. The reason that stress is so dangerous and damaging for the body is that after prolonged periods of stress, the body starts to breakdown.

6. Our model of facial pain suggests that stress leads to increased oral behaviors (oral habits) that eventually result in increased pain.

7. There is nothing that I can do about the pain that I experience.

8. The increased use and over use of the jaw muscles is what produces a majority of facial pain.

9. It is impossible to break bad habits, because you are not aware of your habits because they are unconscious.

10. The main goal of this project is to 'reverse' negative patterns of behavior that cause facial pain.

LESSON TWO

I. Procedures: (You can check these off as you go).

≤ Read lesson 2,
≤ Practice exercises,
≤ Complete Weekly Pain Diary, and Oral Habits Diary
≤ Contact the therapist during weekly time slot to ask any questions or discuss problems,
≤ Take the short quiz on lesson 2,
≤ Mail in your weekly pain diary.
≤ Proceed to lesson 3.

II. Lesson Objectives:

❶ Reminder to send in weekly assessment material
❷ Review and troubleshoot problems that you may be having with exercises and with record keeping
❸ Why Some People Have a Hard Time With Written Assignments
❹ Deep Breathing Exercise,
❺ Written description of your oral habits

III. Lesson Material:

You should have all the following material in your manual.

❶ Weekly Facial Pain Diary
❷ Oral Habits Diary
❸ Oral Habits Frequency Card
❹ Relaxation Recording Form

❶ Send in Pain Rating Forms

The initial procedure each week will be the same. Send in weekly pain ratings from the previous lesson. Include the Weekly Pain Diary and the Oral Habits Diary.

❷ Troubleshooting Problems With Exercises and Record Keeping

During your weekly contact with your therapist, or anytime problems arise, you should communicate with your therapist, and trouble shoot any problems that you may be having with completing the written exercises which are necessary for this intervention to be effective. This is especially important in the first few sessions. If you spend extra time on record keeping now, it will ensure that you will be on track with record keeping and assignments, and will reduce the amount of time spent on this later.

During your weekly correspondence with your therapist, be sure to bring up any problems that you have had with any of the exercises, etc. Your therapist will work with you weekly to ensure that you and comfortable with the exercises and feel that you are completing them correctly. Your therapist will also check to see that recording keeping is going smoothly.

❸ Why Some People Have a Hard Time With Written Assignments

A. General problems with record keeping.

Some general problems that people often have, and need some assistance with include the following:

1) You may not have fully understood the assignment. This is one of the most common causes that individuals do not complete the exercises or the homework. If this occurs, don't be shy or embarrassed, but ask us help explain the instructions better. It is sometimes the case that we fail to clearly explain the exercises or record keeping procedures to the individual.

2) You may feel overwhelmed by the exercises or by the amount of record keeping. The most common reason for this, is that you may feel that you have to complete everything ***perfectly***. Remember that the idea is that you need to find a balance between accuracy and practicality. The person who is trying to be a completely accurate recorder of their oral habits, for example, is doomed to failure since, by definition, many times they occur without their awareness. You may need help prioritizing (e.g., pain diary is most important) which tasks are the most important. We want to reassure you that we are not looking for perfection and do not want this task to be a major life stressor for you.

3) Similarly, you may not be a perfectionist but may find the recording plan itself to be too cumbersome or poorly adapted to your busy lifestyle. You and the therapist need to find ways to integrate record keeping into your daily routine. Use reminders to prompt you to record various information when time permits, but it is important to make a full record As Soon As Possible. Remember, you do not have to do this for the rest of your life. It is important to emphasize that if you put in more work initially, then it will require much less work in the future. The amount of time required for the interventions decreases as time goes by.

4) The Experience of Failure. Sometimes you may not want to keep records because what you find being recorded are personal shortcomings. This information can be uncomfortable to deal with. This can be dealt with by redefining the behaviors that you are targeting in a different way to emphasize successes.

5) Another problem is that oral habits occur when you're busy with other things. Difficulties result when it is difficult to record the behavior right away, because other, more immediate demands are on you. If this is the case, take a look back to lesson 1 where we discuss different ways to keep records when you're busy, or when you want to be inconspicuous.

B. What Else Can I Do to Make Record Keeping Easier?

Several other suggestions to help keep your record keeping on track include the following.

1) Have a third party check whether you are keeping records. You may want to tell your spouse or significant other about this program, and the things that you need to keep track of. Then you might ask them to ask you a couple times per day about whether you are recording information or not.

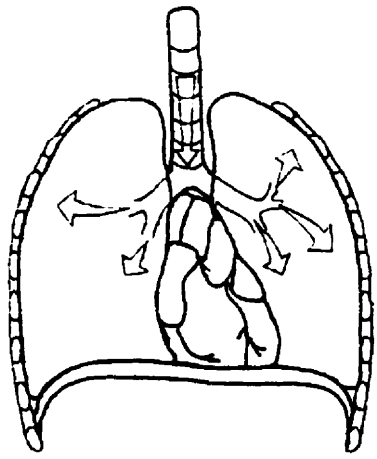
2) Use Cues to remind yourself to keep records. For example, with the pain diary the easiest time to record may be when you wake up, lunch, dinner, and bedtime. Similarly, these may be times to review and note any situations where oral habits may have occurred since the last recording. You may want to use "post-it" notes or have a significant other remind you to keep records.

3) Reward yourself for a good week of record keeping. Treat yourself to a lunch, dessert, or a new CD, etc. for completing records. The therapist will help give you accurate feedback about record keeping.

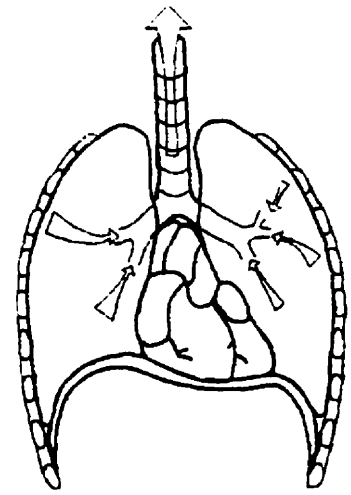
4 Deep Breathing Exercise

Deep breathing exercises are one of the essential building blocks to mastering relaxation procedures of all kinds. They are one of the easiest and most efficient methods for eliciting the relaxation response. You want

Virtually everyone can benefit from deep natural breathing. It is especially helpful for people who are prone to panic attacks, fatigue, hyperventilation, headaches, muscle tension, anxiety, and cold hands and feet. Often these problems are the result of poor oxygenation and waste product disposal, although a combination of factors may contribute to individual cases. Regardless of the cause or the specific nature of distress, deep breathing is an exceptionally cost-effective strategy for managing stress levels in the short term. That is, deep breathing provides you with a technique you can use any time or place to manage the immediate emotional and physiological arousal associated with stressors.



Inhaling



Exhaling

Take a moment right now to examine how you normally take a deep breath. Put one hand on your upper chest and the other on your abdomen. Now take a deep breath and notice which hand rises first. If your top hand rises first, you are using a chest or thoracic breathing pattern. If the hand over your abdomen rises first, you are using an abdominal, or diaphragmatic breathing pattern.

Chest or thoracic breathing is a shallow pattern of breathing that many people adopt over time without even realizing it. This type of breathing is

many people adopt over time without even realizing it. This type of breathing is often rapid and irregular and associated with anxiety and emotional distress. Shallow breathing can diminish your ability to cope with stressful situations, as well as contribute to panic attacks, anxiety, headaches, and fatigue. The deep breathing exercise that we recommend is intended to give you control of your physiological responses when confronted with stressful situations. If you can learn to lower your level of physiological/emotional arousal by a few notches you will be able to think more clearly and more successfully apply other coping strategies to stressful situations. Remember, even when the stressor is uncontrollable, you can still control your emotional response to the situation if you learn coping strategies like the deep breathing exercise.

Deep Breathing Exercise

It is best to breathe through the nose if possible. First, find a comfortable position with your eyes closed. Place one hand on your chest and the other on your abdomen. Try breathing normally initially, focusing on how your chest and abdomen rise and fall. Do they feel well coordinated? Is there tightness or rigidity? Scan for tension in the throat, chest and abdomen. When you first practice this exercise focus on breathing in so that the hand over your abdomen can feel the air first, followed by the rising of your chest and shoulders. This exercise may seem a bit unnatural at first, but it will become more automatic and soothing with practice.

Deep Breathing Exercise

1. Begin by sitting or standing up straight in good posture while remaining comfortable.

2. Breathe in slowly through your nose. If your nose is stuffy, breathe through your mouth.

3. As you inhale, first fill the lower section of your lungs. Your diaphragm will push your abdomen out to make room for the air and the hand over your abdomen will rise. Continue to inhale and feel the middle part of your lungs expand as your lower ribs and chest move forward slightly to accommodate the air. Finally, feel

the upper part of your lungs expand as your chest raises slightly and your shoulder rises and you feel your hand placed beneath your collarbone rise. Draw in your abdomen slightly to support your lungs. This slow deep breath can be completed in a few seconds as one smooth, continuous inhalation.

4. Hold your breath for a few seconds.

5. As you exhale slowly through your mouth, pull your abdomen in slightly and lift it up slowly as the lungs empty. When you have completely exhaled, relax your abdomen and chest. Let the tension out of your shoulders.

6. At the end of an inhalation phase, raise your shoulders and collarbone slightly so that the very top of your lungs are sure to be replenished with air.

A. Practice Now

Go ahead and breathe very deeply and very slowly, filling your lungs from the bottom to the top just as we described above. Let your shoulders rise and hold your breath for a few seconds and then exhale slowly through your mouth. Let your abdomen and chest relax and let the tension out of your shoulders. Don't try to do it perfectly. Try it once to see how it feels, look over the instructions again and try it again. Ideally, if one hand is on your abdomen and the other is on your upper chest, you will be able to see your abdomen hand move first as you inhale and then the hand on your chest. Try it several times this way until you can easily force the air into the lower part of your lungs first when you inhale. If you practice this exercise you will probably be doing it correctly. Remember, you do not have to do the exercise perfectly to benefit from it.

B. Homework

Note that for this exercise to be effective, you do not have to breath this way all the time, but you do need to be able to take three deep breaths like this when you want to. Most people need to practice this exercise in order for them to feel comfortable with it and to be able to do it without effort when they need to. Initially, it is best to practice deep breathing when you are <u>not</u> particularly stressed. Deep breathing will be an excellent way to

relax once it has been paired with the state of deep relaxation. For now though, we just want to practice so that the breathing is easy and natural. You want to practice in a variety of different situations and postures (e.g., at home and work, sitting and standing, working and resting, etc., so that you are comfortable doing the exercise anywhere.).

C. Goal Setting and Overcoming Roadblocks

An ideal goal for practice would be take about forty-five seconds, 5-8 times a day, and take three deep slow breaths the way we described above. For most people this "homework" is not seen as very difficult. Most people enjoy the exercise and most think that they would have the time to be able to practice. The most frequent difficulty people have in actually practicing, is remembering to practice. To help yourself remember to practice you might want to pick a few set times a day (e.g., just before meals, before every class, when you wake up and just before bed) or a few specific situations (e.g., whenever you get in the car, whenever you turn on the TV). Planning a few set times to practice every day is a good way to get started on this exercise. You may also want to put a post-it note up someplace where you would see it frequently to remind you to breath or place a note in a drawer that you use frequently as a reminder.

D. Tracking Your Progress

Keep a tally sheet of how many times you practice the deep breathing exercise. You will find that by keeping a record you will be more motivated to practice and more likely to remember to practice. Many people keep a 3x5 card with them with the date for each day of the week on each row and place a hash-mark next to the date for each time they do the breathing exercise. The following is an example of a simple recording sheet.

Deep Breathing Recording Sheet

Date	Number of Times I Practiced Breathing Exercise
4-15-97	/ /// /
4-16-97	// / / /
4-17-97	/ (weekend- forgot until I went to bed)
4-18-97	// / / // (made a point to remember today)
4-19-97	// / ///
4-20-97	/ // // / //
4-21-97	/ // / /// / (practicing is easy; do it all the time)
4-22-97	/ // / / /// (did deep breathing in tense situation at work - really helped me calm myself before I took my test)

There are several strategies you might want to consider to help you remember to practice the exercise. One technique is to schedule the exercise into your daily routine to coincide with other routine events in your schedule. For example, many people decide to practice when they first wake up, at breakfast, lunch and dinner, and just before bedtime. Since these events occur during the day anyway, they can serve as reminder, or a cue, to do the breathing exercise. Another strategy is to put "sticky notes" with the word "breath" in conspicuous places to act as a reminder to breath. You want to develop your own strategy to remember to practice and soon the deep breathing habit will be virtually automatic.

You do not have to use a 3x5 card to keep track of your breathing exercise. You can use a notebook, or an appointment book, or anything that you find makes record keeping convenient. The important point is to come up with a system that works for you.

E. Self-Efficacy Beliefs

Self-efficacy beliefs refers to how confident a person is that they will perform adequately in a particular situation. These beliefs predict a person's actual performance in a given task. Take a moment and assess your own self-efficacy beliefs regarding these exercises in the box below.

Self-Efficacy Rating

How confident are you that you will be able to practice this exercise 4-5 times a day?

On a scale of 0% confidence to 100% confidence what rating would you give yourself?

Write your rating in here _____.

If you gave yourself a rating of 80% or more you will very likely be successful. For most people, when they figure out how to remember to practice, they have no difficulty with this assignment and are on their way to developing one of the most powerful, yet most portable and easiest stress management techniques available. If you have read this book thus far you are almost certainly one of those on their way to success. If you gave yourself a rating of less than 80% but want to learn these stress management skills, go back and see if the goal was set too high for you. If a less ambitious goal of 3-4 times per day or even 2-3 times per day increases your

confidence rating, then start with a smaller goal and build yourself up to the more challenging one. It is always better to set smaller goals and progress slowly than to have goals that are too high and lead to failure. Set yourself up for success. Set goals that are realistic and reachable.

❺ Written Description of Your Oral Habits

We want you to continue to increase your awareness of oral habits. On the following page we would like for you are to write a detailed description of the various oral habits that you might engage in. Write a separate description for each oral habit you engage in with some frequency. This exercise will force you to pay attention to each oral habit, and to all the sensations that are created when you clench your teeth, or bite your nails, or whatever. Provide as much detail as possible (e.g., how your mouth moves, what sounds are created, etc.), using the following page to describe your various oral habits. This is a well proven exercise to help people become more aware of the habits they engage in. By writing about your oral habits and thinking about them you become more sensitive to their occurrence during daily activities. As we mentioned in Lesson 1, becoming sensitive or aware of your oral habits when they occur is the first step in stopping and reversing the habit.

Description of Oral Habits

On the following lines, please list a detailed description of each oral habit that you engage in. The more detail that you can provide about each habit the better. Include information about the habit such as the motion of your mouth, sensations you experience, tastes, and feelings that you experience.

Oral Habit #1:

Oral Habit #2:

Oral Habit #3:

Lesson 2 Practice Exercises

This week you will continue some of your activities from last week and begin practicing the exercises learned in this week's lesson.

1. **Pain Diary** - Again, your first assignment every week will be to continue to fill out the facial pain diary four times a day.

2. **Oral Habits Frequency Monitor Sheets** - Continue to use the 3x5 card during the week to monitor the frequency of your oral habits. Simply make a slash mark on the card each time you catch yourself in one of your oral habits.

3. **Oral Habits Diary** - Use the oral habits diary provided here on a daily basis. The instructions and an example are included.

4. **Written Detailed Description of Various Oral Habits** - On the recording sheet provided within the lesson, write a detailed description of your oral habits. Write a separate description for each oral habit you engage in with some frequency. This exercise will force you to pay attention to all the sensations that are created when you clench your teeth, or bite your nails, or whatever. Provide as much detail as possible (e.g., how your mouth moves, what sounds are created, etc.). This is a well proven exercise to help you become more aware of the habits they engage in.

5. **Deep Breathing** - During the week you want to practice the deep breathing exercise several times a day. Try to practice the exercise at least four times a day preferably 5-6 times a day. The exercise takes just 30 seconds to complete. You might want to plan on practicing the deep breathing each time you fill out your pain diary as a way to cue you to practice. Try practicing in a variety of situations and postures (e.g., in the car, at work, in the kitchen, standing, sitting, laying down). The goal this week is to become very proficient at the deep breathing exercise so that you can perform the exercise at will and you feel comfortable doing the exercise in virtually any setting. Record how many times you practiced on your Relaxation Recording Sheet.

6. **Send in your weekly pain dairy and Relaxation Recording Sheet.**

Oral Habits Recording Sheet

Day / Time	Antecedents	Behaviors-Actions Thoughts/Emotions	Consequences

Under the consequences section of each event, add a SUDS rating. **SUDS**= Subjective Units of Distress: On a scale from 1 to 10, rate the intensity of your feelings (including pain). 1= no distress or facial pain while 10=severe distress or incapacitating pain.

Oral Habits Recording Sheet
(Example)

Day / Time	Antecedents	Behaviors-Actions Thoughts/Emotions	Consequences
Tues. morning 7:30 a.m.	Driving to work when I hit a back-up at the toll plaza.	Tapping the wheel, clenching my teeth, thinking I will be late for work.	Feeling tension and pain in my jaw. Feeling the start of a headache.
Wed. afternoon	Behind with the days work. Boss gives me more work that is due today	Feeling that I will have to work late again. Why is she doing this to me again.	tension in my neck and shoulders, facial pain is becoming worse, jaw is killing me.
Wed. 7pm	At home watching TV.	chewing on my fingernails. Think Why am I doing this?	noticed I was chewing on my nails so I stopped

Under the consequences section of each event, add a SUDS rating. **SUDS**= Subjective Units of Distress:
On a scale from 1 to 10, rate the intensity of your feelings (including pain).
1= no distress or facial pain while 10=severe distress or incapacitating pain.

Assessment for Chapter 2

Please respond to the following questions regarding material from Chapter 2 of the Facial Pain Treatment Manual by answering 'True' or 'False' below the question and then mailing this material back to us with your weekly pain diary.

1. The reason that proper breathing is so important to our program is that good breathing cleanses the body and mind.

2. Most people breath in the proper manner, and take long, deep breaths.

3. To become proficient with the breathing technique you need to practice several hours per day.

4. The steps in deep breathing include inhaling through the nose, filling the lungs from top to bottom, holding the breath for a second or two and then exhaling through the mouth.

5. The main purpose for writing a description of your oral habit(s) is to make you see how irrational the habit is.

6. Awareness training is one of the key components of this Habit Reversal treatment program.

7. The reason we ask you to say 'relax' to yourself, is because we want the word to be associated (though about) with the state of being relaxed.

8. When you practice the facial muscle exercises, it is important that you hold the tension in your muscles until they hurt, otherwise you are not getting good exercise.

9. The reason we suggest using deep breathing be used when engaging in oral habits is because the relaxation produced is directly incompatible (a competing response) to the oral habits.

10. The most important thing to remember is that when you find yourself engaging in oral habits you need to relax your jaw, either by deep breathing or facial exercises.

LESSON THREE

I. Procedures:

- Read lesson 3,
- Practice exercises,
- Complete Weekly Pain Diary, and Oral Habits Diary
- Contact the therapist during weekly time slot to ask any questions or discuss problems,
- Take the short quiz on lesson 3,
- Send in your weekly Pain Diary and Relaxation Recording Form.
- Proceed to lesson 4.

II. Lesson Objectives:

1. Reminder to send in weekly assessment material
2. Review and troubleshoot problems that you may be having with exercises and with record keeping
3. Illustrate and practice the facial exercises
4. Review and elaborate description of oral habits,
5. Deep Breathing and Facial Exercises as Competing Responses

III. Lesson Material:

You should have all the following material in your manual.

1. Weekly Facial Pain Diary
2. Oral Habits Diary
3. Oral Habits Frequency Card
4. Relaxation Recording Form w/ list of muscle groups

❶ Remember to Send in Weekly Diaries

The same procedure every week will be to send in weekly pain ratings from the previous week. Include the Weekly Pain Diary and the Oral Habits Diary.

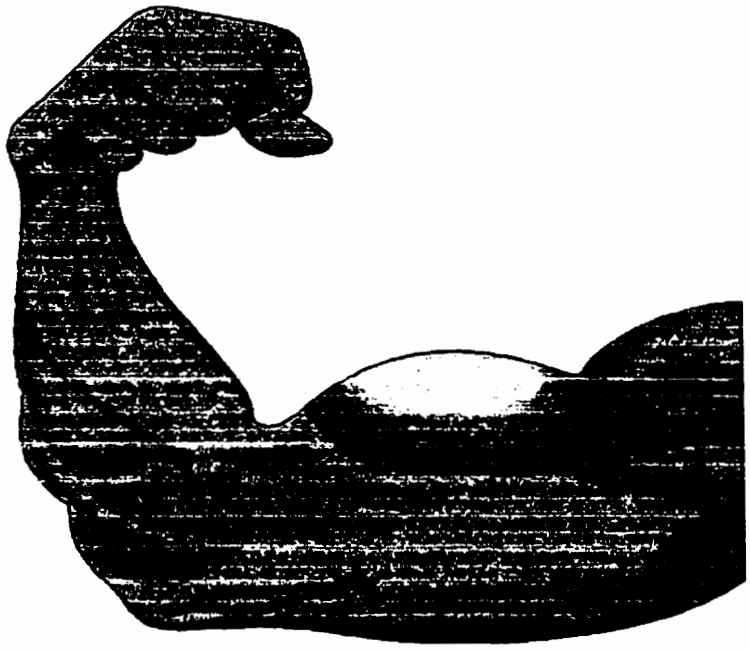
❷ Review and Troubleshoot Practice Exercises

Prior to starting each lesson you should talk with your therapist, during your weekly time, or anytime you have a question, and trouble shoot any problems that you may be having with record keeping. This is especially important in the first few sessions. If you spend extra time on record keeping now, it will ensure that you will be on track with record keeping and assignments, and will reduce the amount of time spent on this later. The therapist will also review the weekly homework with you during the weekly contact.

During your weekly correspondence with your therapist, be sure to bring up any problems that you have had with any of the exercises, etc. The therapist will work with you weekly to ensure that you are comfortable with the exercises and feel that you are completing them correctly. The therapist will also check to see that recording keeping is going smoothly.

❸ Illustrate and Practice the Facial Exercises

In addition to the deep breathing exercises we also have some facial muscle exercises that we will want you to practice in the coming week. Because the muscles of the face are crucial for people who suffer from TMD we want to teach you these exercises early in the treatment program. The basic idea for doing these exercises is to let you become more aware of the level of muscle tension in your face so that you will be more aware when the tension level is high. As you become more sensitive to the tension in your face you will be better able to use the techniques you are learning in this program to lower tension in your face and jaw.



General Rules for Facial Muscle Exercises

For each of the muscle groups described in the following section, you will go through a process of tensing and then relaxing the muscles. This will help you become more aware of the sensations that you experience when your muscles are relaxed and when they are tense. The following are a few general rules to follow when you are attempting this procedure.

A. Muscles should be kept tense for 10-20 seconds.

B. Tension should be released all at once.

C. Pay particular attention to the contrast between tension and relaxation and that after the tension has been released we want to scan the muscles and try to allow the release of even more tension. Special attention goes to the muscles of the jaw, mouth and front of the neck.

D. Never tense your muscles to the point of pain.

Three Facial Muscle Groups:

1. **Forehead** - In this exercise you want to create tension in your forehead, from temple to temple and from your eyebrows to your hairline. To do this, arch your eyebrows high (as in a surprised look) and notice the tension all through your forehead. (See Illustration)

2. **Eyes, Nose, Cheeks** - In this exercise you want to create tension in your eyes and temples. Do this by shutting your eyes tightly while you crinkle up your nose like something smells bad. Pay particular attention to the feelings of tension created in your temples and eye sockets (See Illustration).

3. **Jaw, Mouth and Front of Neck** - This exercise is designed to produce tension in the front of your neck and jaw area. This can be done by biting down gently on your molars and making an very exaggerated frown (really pull the corners of your lips down). During this exercise, pay attention to feelings of tension created in the neck and jaw areas. (See Illustration).

During the exercise say things to yourself like "let the jaw go slack" and remember, your jaw is like a hinge and the natural position of a hinge is open".

E. Troubleshooting:

Were you able to produce a clearly noticeable amount of tension in each of the muscles? Were you able to notice the contrast between tension during the "tension" phase and then relaxation during the "relaxation" phase? If so, you are probably performing this exercise correctly. You may need to experiment a little bit when you try to create tension in each muscle group. The idea is to produce tension and then relaxation in your muscles. If you are doing that, you are doing just fine, even if the exact instructions (e.g. making an exaggerated frown) seemed difficult. Also, remember to ask the therapist about any problems if you feel you still need help trying to relax these particular muscle groups.

Was pain a problem when relaxing a particular muscle group? One of the main things to remember when doing these exercises is not to tense these muscles to the point of pain. If this happens, ease up on tension on the particular muscle or do not clench this particular muscle group. It is pretty typical for people to have trouble with the neck and facial muscles because they are the most tense to start with. We encourage you to go back and practice the difficult muscle groups a second time when they practice the exercise at home. Also note, however, that there are always going to be some muscles that relax more slowly than others and therefore do not be overly concerned by the rate at which different muscles relax.

4 Review and Elaborate Description of Oral Habits

We want to continue to focus on becoming aware of your various oral behaviors. Therefore, find your description of your oral habits from last week, and review them. Is there anything that you missed? Are there any other details that you can think of? If so, write those down now.

5 Deep Breathing and Facial Exercises as Competing Responses

The deep breathing exercise and facial muscle exercises should be practiced several times per day. If you practice them at the same time, do the facial exercises first and then the deep breathing. You do not have to practice them together all the time. Learning to relax is a skill like any other skill. The rate at which you progress is dependent on how much you practice. The more proficient that you become with these exercises, the better. We want you to be able to do these exercises, at least the deep breathing, anytime and anywhere. Therefore, practice should occur in a variety of settings (e.g. home, work, driving, etc.) and postures (e.g. laying, sitting, standing) in order to become familiar with the exercises, and to feel comfortable performing them in a variety of situations. We want you to be able to perform these exercises easily whenever you choose to practice (e.g., without using your hands in the deep breathing exercise to monitor stomach and chest movements or the instruction sheet with the facial exercises). You will want to practice the facial exercises in private (as people will think it is rather odd doing these exercises in public). The deep breathing exercise is something that can be done in a variety of situations. As soon as you can do these exercises easily (presumably sometime during this week) we want you to begin to use these exercises whenever you find yourself engaging in one of your oral habits. Whichever exercise you use, the end point should be the same. The jaw slack, upper and lower teeth not touching, and the lips together or slightly parted. In this position it is impossible to be clenching teeth, biting the lip, biting the inside of the mouth etc.

Remember, this does not mean that you will have to walk around with your mouth hanging wide open.

Practice is the key to this procedure. To receive noticeable benefits from these techniques, you need to practice several times per day, at least initially.

Use your Relaxation Record Sheet to record practicing both deep breathing and facial exercises.

Deep Breathing:

This is the shorter version to practice deep breathing. If you do not feel comfortable with the deep breathing exercise, please refer back to lesson 2 and review the full deep breathing procedure.

Natural Breathing:

a) inhale through the nose and exhale through the mouth,
b) fill the lungs from bottom to top in a slow fluid motion,
c) hold your breath for a few seconds and exhale completely.
d) as you exhale, let your shoulders drop and notice the relaxation.

PRACTICE EXERCISES: LESSON THREE

1. Pain Diaries and Oral Habits Frequency Card - continue these two exercises.

2. Oral Habits Diary - continue keeping track of your oral habits by noting the antecedents, behaviors, and consequences in this diary.

As previously noted, the most common daytime oral habits include teeth clenching, fingernail biting, lip biting, and gum chewing. The first key to stopping these pain producing behaviors is to become aware of the habit. The second key is to figure out what the triggers are... that is, what are the situational cues associated with these habits. Most habits occur in two different types of situations: 1) absentmindedly, and 2) during stress. In general, those oral habits that occur absentmindedly can be eliminated simply by becoming aware of habit. Stress-related oral habits usually require the full habit reversal treatment to eliminate.

You will need to keep a structured diary of your oral habits. The structured diary helps you become more aware of the thoughts and feelings associated with your oral habits and identifies the features of the situations that trigger oral habits. On the following page the sample diary is reproduced along with the key questions that you want to answer in each section of the diary

It would be impossible to record <u>every</u> instance of the oral habits you engage in and we do not want you to try. You do however want to record a broad range of situations and types of oral habits that you engage in. To do this you will have to become an oral habit detective. Noticing and keeping track of your oral habits should be at the very forefront of your consciousness. You need to turn up your sensitivity to your oral habits and capture as many of them on paper in your oral habits diary as practically possible.

3. Deep Breathing - Continue to practice deep breathing 5-6 times per day until you feel comfortable with deep breathing.

4. Facial Exercises - Practice the facial exercises you learned in this lesson 3-5 times a day. Try to practice the facial exercises in conjunction with the

deep breathing exercise (but you want to practice the deep breathing without the facial exercises as well). Record how many times you practiced the facial exercises on your relaxation and breathing record form. Remember, never tense the muscles to the point of pain. There is sheet in your packet to remind you of the muscle groups involved in the facial exercises.

Oral Habits Recording Sheet

Day / Time	Antecedents	Behaviors-Actions Thoughts/Emotions	Consequences

Under the consequences section of each event, add a SUDS rating. **SUDS**= Subjective Units of Distress: On a scale from 1 to 10, rate the intensity of your feelings (including pain). 1= no distress or facial pain while 10=severe distress or incapacitating pain.

Oral Habits Recording Sheet
(Example)

Day / Time	Antecedents	Behaviors-Actions Thoughts/Emotions	Consequences
Tues. morning 7:30 a.m.	Driving to work when I hit a back-up at the toll plaza.	Tapping the wheel, Clenching my teeth, thinking I will be late for work.	Feeling tension and pain in my jaw. Feeling the start of a headache.
Wed. afternoon	Behind with the days work. Boss gives me more work that is due today	Feeling that I will Have to work late again. Why is she doing this to me again.	tension in my neck and shoulders, facial pain is becoming worse, jaw is killing me.
Wed. 7pm	At home watching TV.	Chewing on my fingernails. Think Why am I doing this?	noticed I was chewing on my nails so I stopped

Under the consequences section of each event, add a SUDS rating. **SUDS**= Subjective Units of Distress: On a scale from 1 to 10, rate the intensity of your feelings (including pain). 1= no distress or facial pain while 10=severe distress or incapacitating pain.

Assessment for Lesson 3

Please respond to the following questions regarding material from Lesson 3 of the Facial Pain Treatment Manual by answering 'True' or 'False' below the question and then mailing the material back to us along with the weekly pain diary.

1. The most important reason for learning facial pain exercises is to become more aware of tension in your face and jaw muscles.

2. When tensing your muscles it is important to hold that tension for 3-5 minutes.

3. If you feel pain, then you know that you are performing the facial exercises properly.

4. The three facial muscle groups include the 'forehead', 'eyes, nose and cheeks', and 'jaw and neck'.

5. When clenching your teeth during the facial exercises, you should try to create some pain in your jaw to be certain that you are doing it correctly.

6. An important point to remember during these facial exercises is that you want to focus on the contrast between relaxation and tension that you create with the exercises.

7. Elaborating the descriptions of your oral habits helps you to become more aware of your oral habits when they occur.

8. It is important to practice the deep breathing in a variety of situations to become comfortable with the exercises.

9. Facial exercises should be practiced during meetings, in crowded restaurants and with other people.

10. You should use your oral habits recording form to record situations that you find yourself engaging in oral habits.

LESSON FOUR

I. Procedures:

- Read lesson 4,
- Practice exercises,
- Complete Weekly Pain Diary and Oral Habits Diary
- Contact the therapist during weekly time slot to ask any questions or discuss problems,
- Take the short quiz on lesson 4,
- Send in the pain diary and relaxation recording sheet from lesson 3.
- Proceed to lesson 5.

II. Lesson Objectives:

❶ Reminder to send in weekly assessment material
❷ Question review and troubleshoot problems that you may be having with record keeping,
❸ Develop additional incompatible behaviors
❹ Practice facial exercises and deep breathing
❺ Utilize negative practice to enhance awareness of maladaptive oral habits
❻ Review and practice the relaxation procedure using the audio tape provided.

III. Lesson Material:

You should have all the following material included with your manual.

❶ Weekly Facial Pain Diary
❷ Oral Habits Diary
❸ Oral Habits Frequency Card
❹ Relaxation Recording Form
❺ Relaxation Audio Tape

❶ Send in Pain Rating Forms

The first procedure every week will be to send in weekly pain ratings from the previous week. Include the Weekly Pain Diary and the Oral Habits Diary.

❷ Troubleshooting Problems when Keeping Records

Prior to starting each lesson you should talk with the therapist, during your weekly time, or anytime you have a question, and trouble shoot any problems that you may be having with record keeping.

During your weekly correspondence with the therapist, be sure to bring up any problems that you have had with any of the exercises, etc. The therapist will work with you weekly to ensure that you and comfortable with the exercises and feel that you are completing them correctly. The therapist will also check to see that recording keeping is going smoothly.

Remember to tell the therapist about any difficulties that you had with completing the facial exercises. What muscle groups were the most problematic?

If pain was a problem or if you felt unable to really tense a particular muscle group, there are alternative exercises that you can ask the therapist about. Most typically, people have trouble with the neck and facial muscles because they are the most tense to start with. Remember to go back and practice these specific muscle groups a second time when you do the exercises at home. Also note, however, that there are always going to be some muscles that relax more slowly than others and therefore don't be overly concerned by the fact that some muscle groups relax more easily than do others. You also need to record your SUDs ratings, and let the therapist know if the facial exercises and deep breathing have been effective.

❸ Develop Additional Incompatible Behaviors

This is the time where we help you develop unique (instead of just the deep breathing and facial exercises that everybody starts with) responses that are incompatible with your particular oral habit(s). The idea here is that we want to find other behaviors that you can do that DO NOT allow you to engage in your oral behaviors (therefore they are incompatible with your oral habits). Be creative when trying to think about what you can do to stop your oral habits. Here are some examples:

Oral Behavior	**Incompatible Behavior**
biting fingernails	sitting on your hands keeping your hands in your lap putting both of your hands on the steering wheel of the car
clenching your teeth	consciously making space between your upper and lower teeth saying 'relax' to yourself and try relaxing your jaw
grinding your teeth	tell yourself to relax and create a space between upper and lower teeth
resting hands on face	tell yourself to sit up straight put hands in lap or flat on the table/desk

Now let's try to find out what unique behaviors you can do to interrupt your specific oral habits.

List Your Oral Habit(s) Here:

#1 _____

#2 _____

#3 _____

Let's come up with some behaviors that we can use that are incompatible with your oral habits. Remember that the idea is to come up with an alternative behavior that you can do ***instead*** of your oral habit, a behavior that ***prevents*** you from being able to engage in your oral behavior.

Incompatible behaviors:

Oral Habit #1:

_____

_____

Oral Habit #2:

_____

_____

Oral Habit #3:

_____

_____

4 Practice Facial Exercises, and Deep Breathing

Practicing relaxation exercises is crucial to help you feel comfortable and become proficient with the techniques. So we would like you to keep practicing these exercises each week. Here are the abbreviated instructions for natural breathing and facial exercises again:

Natural Breathing:

a) inhale through the nose and exhale through the mouth,
b) fill the lungs from bottom to top in a slow fluid motion,
c) hold your breath for a few seconds and exhale completely.

Three Facial Muscle Groups:

1. Forehead - arch eyebrows as in a surprised look.

2. Eyes, Nose, Cheeks -shut eyes tightly while you crinkle up your nose like something smells bad.

3. Jaw, Mouth and Front of Neck - bite gently on the molars and make an very exaggerated frown.

5 Utilize Negative Practice to Enhance Awareness of Maladaptive Oral Habits and Stop Teeth Grinding at Night

For the following exercise, you need to have your sheet where you listed and described your oral habits (refer to lesson 2 for this information). Let's review this sheet now. Read through the descriptions that you provided for your oral habits. Are there any additional details that you can think of or remember when describing your maladaptive oral habits. You may have thought of some of these after recording oral habits for the past three weeks.

The idea of negative practice is to become very aware of your various oral behaviors by specifically engaging in the behavior. This procedure is effective because it helps you to focus on the behavior and all the subtle

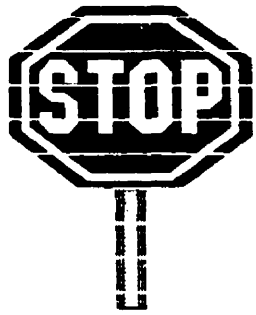
occurring, and therefore utilize the competing responses (facial exercises, loosening the jaw, deep breathing, etc.) to stop the oral behavior.

Okay. So now you've reviewed your description of your oral habit(s). Sit down and we're going to practice your habit to increase awareness of these behaviors. Yes, that's right, we want you to deliberately engage in your oral habits while you pay close attention to all aspects of the sensations that you experience (sounds, touch, feelings, sensations, etc.). Here are the steps:

This technique is very helpful for individuals that grind their teeth at night. We will focus more on addressing teeth grinding at night in some of the following lessons

Steps in Negative Practice Exercise.

1) Sit down
2) Read description of your oral habit(s)
3) Deliberately engage in your oral habit (Do not use so much force as to cause pain. If you start to feel pain, STOP)
4) Pay attention to all the sensations you experience



5) Say "***Stop***" out loud if you can, or just shout "***Stop***" to yourself
6) Relax your jaw muscles.

6 Progressive Relaxation Training: Review and Practice

We have provided you with an audio tape of a relaxation procedure that we would like you to try to help reduce muscle tension. The technique is called **progressive relaxation training** or **PRT** and has been shown to be very effective with helping people reduce their level of muscle tension.

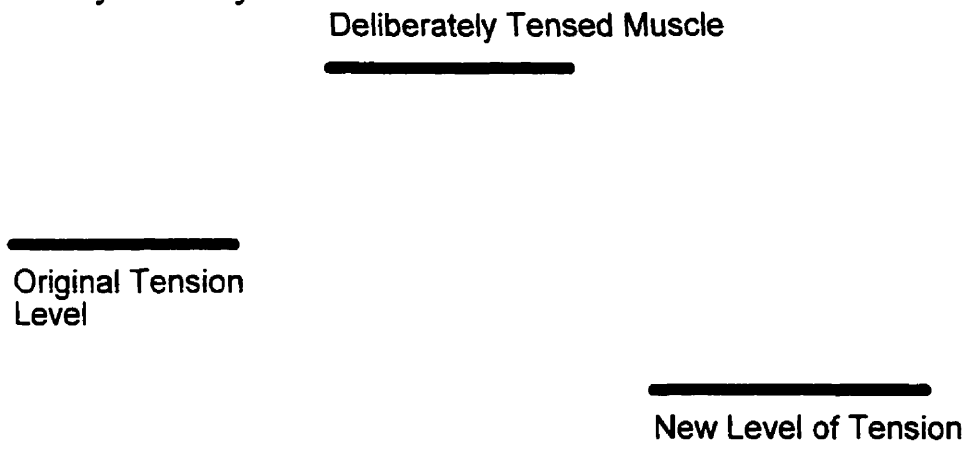
In PRT you will learn to relax your muscles and achieve a deep state of relaxation. Even more importantly, you will also learn to be more aware of muscle tension during your day to day activities and be able to reduce tension before it gets to the point of causing pain. You will achieve this deep state of relaxation by progressively tensing and relaxing your muscles. By noticing what the sensations of tension and relaxation feel like during this exercise, you will learn to become more sensitive to changes in bodily tension during the day.

Many of us are not sensitive to muscle tension changes and only notice it when tension reaches very high levels, for example, when your body starts hurting, such as with facial pain, tension headaches, or a stiff neck. Also, there are many people who have had very high levels of muscle tension for so long that they don't even realize that there muscles are tense.

One of the most important things to learn with PRT is to be more sensitive to the signals that your body is sending you, and apply relaxation skills before the level of tension becomes excessive (and contributes to pain). In PRT we deliberately create tension and relaxation so that you can learn to be more sensitive to rising levels of tension and more aware of what the sensation of relaxation feels like.

You will actually be learning to discriminate between tension and relaxation by purposely tensing and relaxing your muscles. This is a particularly good method for learning to relax because by tensing your muscles you fatigue the muscles and therefore, when you release the

tension, your muscles are more relaxed than they were to start with. This is the way the body works.



By this time you should have practiced the deep breathing exercise and have become pretty good at it. You will be using these skills during the PRT exercise.

As you practice the deep breathing and PRT at home you will become increasingly better at sensing changes in the level of muscle tension in your body. During your daily activities you will be able to detect tension much sooner than you do now and through the deep breathing exercise you will be able to reduce your level of tension.

Learning plays the most important role in this process. As you practice the PRT exercises, you pair the word "RELAX" with the feeling of relaxation. Eventually, if this pairing occurs often enough, the word "RELAX" should elicit the sensation of relaxation without actually going through any more of this procedure than the deep breathing. The environment should not matter. Eventually, you should just be able to say "RELAX" and experience a decrease in your tension level.

When you listen to the audio tape, the narrator will walk you through the directions on how to do PRT. But we thought that it might be helpful for you to preview the instructions and the muscle groups that are used prior to listening to the tape.

Considerations for PRT

Some important considerations when doing PRT (these are the same as for the facial exercises):

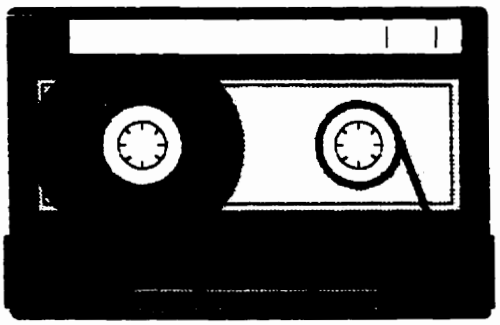
1. NEVER tense your muscles to the point of pain.

2. Relax your muscles ***completely*** when the narrator says "relax".

3. Contrast the feelings of tension with relaxation for each muscle group.

The muscle groups for PRT include:

1st - hands and forearms (make a fist and clench)
2nd - upper arms (push elbows against the floor or back of chair)
3rd - mouth, eyes, and nose (crinkle nose, close eyes tightly)
4th - cheeks (exaggerated frown and clench teeth)
5th - neck and chin (tuck in chin and flex neck muscles)
6th - chest and upper back (push shoulders forward and flex chest muscles)
7th - stomach muscles (clench like taking a punch to the stomach)
8th - leg muscles (flex upper and lower leg muscles)
9th - feet (curl your toes back towards your body)



Listen to the PRT Audio-tape

Now that you are familiar with the muscle groups that you will be working with, go ahead and listen to the Progressive Relaxation Tape.

Practice Progressive Relaxation Training Exercises

Begin regular practice of the relaxation exercises if you are not already doing so. You need to be proficient at these exercises for the oral habit reversal treatment to work well. Many pain patients have high levels of muscle tension generally, and specifically have a great deal of upper body tension. Regular practice of PRT exercises will lead to a reduction in your normal (or baseline) levels of tension and facilitate your awareness of oral habits. For some head and facial pain sufferers the deep breathing and PRT exercises alone are sufficient to bring about a dramatic decrease in pain intensity. Proceed through the PRT exercise and do not worry that some muscles do not get as relaxed as others, or that you have difficulty noticing the contrast in some muscles. As you practice, the contrast and relaxation that you feel in your limbs and other muscles will generalize to the more problematic muscle groups.

Deep breathing is a skill that you will profit from with increased practice. PRT on the other hand is a skill that you will practice a lot initially and then over time you can decrease and discontinue your practice. This is because PRT does not need to be practiced as frequently as you learn to become more sensitive to increased levels of tension in your muscles. However, many people find that PRT exercises are very relaxing and choose to continue to routinely practice the exercises even after the program is completed. It's up to you. Once you are 'good' at the relaxation exercise, you have the option of decreasing or discontinuing the practice. We expect that it will take about 4-6 weeks of practice to become 'good' at detecting increased levels of tension in your body. If you become proficient at PRT and decide to discontinue the practice, and find that tension and pain become problematic once again, you can simply begin practicing the relaxation exercise again.

If you have not been practicing the deep breathing exercise from lesson 2 for a while, go back and refamiliarize yourself with this exercise by practicing 3-5 times per day for several days. In addition to the deep breathing, practice tensing and releasing the three facial muscle groups covered in chapter 3 (1. forehead, 2. eyes, nose and cheeks, 3. mouth, chin, and neck) several times per day. Initially, the practice should occur in a

variety of settings and postures in order for you to become familiar with the exercises. You want to be able to perform the exercise easily whenever you choose to practice (e.g., without using the hands in the deep breathing exercise or the instruction sheet with the facial exercises). Whichever exercise you use, the end point should be the same. The phrase "lips together and teeth apart" should be your new mantra. Say this phrase to yourself every time you notice yourself engaging in one of your oral habits. Keep your jaw slack, do not allow your upper and lower teeth to touch, and let your lips rest gently together (or even slightly parted if that helps you to relax your mouth and jaw). In this position it is impossible to be clenching your teeth, biting your lip, biting the inside of your mouth, etc.

PRACTICE EXERCISES: LESSON FOUR

1. Pain Diaries, Oral Habits Frequency Card, and Oral Habits Diary - continue these exercises as usual. Remember to note in your oral habits diary when you use deep breathing and facial exercises to replace oral habits.

2. Oral Habits Diary - continue keeping track of your oral habits by noting the antecedents, behaviors, and consequences in this diary. In addition, we would like you to begin actively replacing these oral habits with deep breathing and facial exercises. In other words, when you catch yourself engaging in an oral habit, immediately do your facial exercises and/or take three deep breaths. This should help you to stop engaging in your oral habit. Your oral habit will be noted on your frequency card along with whether or not you were able to stop it. However, your oral habits diary should reflect your use of these exercises. For example, an entry in your oral habits diary might say the following:

Antecedents	Behaviors	Consequences
Stuck in traffic, worried I'll be late for work.	Caught myself biting my lip - did facial exercises and took 3 deep breaths.	Jaw more relaxed and I'm not biting my lip anymore.

3. Deep Breathing - You are ready to make deep breathing and facial exercises a more active component of your treatment plan. Therefore, we would like you to use these techniques as follows:
(1) when you're in a stressful situation, take some deep breaths to help relax.

(2) when you catch yourself engaging in oral habits, take deep breaths to help you relax and stop the oral habit. Use deep breathing as an incompatible response to oral habits.

Record how often you practice this technique and the results, in the Relaxation Recording Form.

4. Negative Practice Exercise - Similar to the exercise in the chapter, we want you to practice recognizing your oral habits. We want you to practice the same exercise that we did in the lesson. Use your written description of your oral habits to help you 'recreate' the oral habit(s). Then imagine yourself in stressful situations similar (or the same) as those you describe in your oral habits diary. Engage in the oral habit and then tell yourself to ***"Stop"*** engaging in the oral habit. Then utilize the competing responses (facial exercises, letting the jaw go slack, etc.) to help stop the oral habit and reduce tension from the oral behaviors.

5. Facial Exercises - continue to practice 3 to 5 times per day and use in stressful situations as an incompatible response to oral habits. Record how often you are able to practice this exercise, and the results achieved in the Relaxation Recording Form.

Muscle groups for facial exercises:

1. forehead -- arch eyebrows

2. eyes, nose, cheeks -- shut eyes tightly, crinkle nose

3. mouth, jaw, neck -- Bite down gently on the back teeth make an exaggerated frown by drawing the corner of the lips down

6. **Relaxation Tape** - Listen to the relaxation audio tape and follow the instructions at least **three (3)** times this week. Record how often you are able to practice in the Relaxation Recording Form that is included.

7. **Remember to send in the weekly pain diary and the relaxation record sheet.**

Relaxation Recording Form

Technique Practiced breathing, PRT facial exercises, competing responses	SUDS Level Before Practice	SUDS Level After Practice

SUDS= Subjective Units of Distress:
On a scale from 1 to 10, rate the intensity of your feelings (including pain).
1= no distress or facial pain while 10=severe distress or incapacitating pain.

Oral Habits Recording Sheet

Day / Time	Antecedents	Behaviors-Actions Thoughts/Emotions	Consequences

Under the consequences section of each event, add a SUDS rating. **SUDS**= Subjective Units of Distress: On a scale from 1 to 10, rate the intensity of your feelings (including pain). 1= no distress or facial pain while 10=severe distress or incapacitating pain.

Assessment for Lesson 4

Please respond to the following questions regarding material from Chapter 4 of the Facial Pain Treatment Manual by answering 'True' or 'False' below the question and then mailing this material back to us with your weekly pain diary.

1. An incompatible behavior is one that can NOT occur at the same time as your oral habit.

2. Incompatible behaviors work by keeping you busy so you can't think about how stressed out you are.

3. The main purpose of the Negative Practice technique is to aggravate your facial pain by forcing you to engage in your oral habits.

4. One of the main goals of PRT is to learn to be sensitive to the levels of tension in your body.

5. The reason that PRT works is due to the fact that after deliberately tensing your muscles, they become fatigued and need to relax (and therefore have a lower tension level).

6. PRT is a skill, just like playing piano, the more that you practice, the better you get at relaxing.

7. The reason we ask you to say 'relax' to yourself, is because we want the word to be associated (though about) with the state of being relaxed.

8. When you practice the PRT exercises, it is important that you hold the tension in your muscles until they hurt, otherwise you are not getting good exercise.

9. The reason we suggest using deep breathing be used when engaging in oral habits is because the relaxation produced is directly incompatible (a competing response) to the oral habits.

10. The most important thing to remember is that when you find yourself engaging in oral habits you need to relax your jaw and keep a gap between your teeth, either by deep breathing or facial exercises.

LESSON FIVE

I. Procedures:

- Read lesson 5,
- Practice exercises,
- Complete Weekly Pain Diary and Oral Habits Diary
- Contact the therapist during weekly time slot to ask any questions or discuss problems,
- Take the short quiz on lesson 5,
- Proceed to lesson 6.
- Remember to send in weekly pain diary and relaxation record sheet.

II. Lesson Objectives:

❶ Reminder to send in weekly pain measures and oral habits diary
❷ Question review and troubleshoot problems. Review homework, paying particular attention to the oral habits diary for times when you were able to use facial exercise and/or deep breathing as incompatible response in stressful situations
❸ Discuss the utility of negative practice from previous week
❹ Practice competing responses,

1. deep breathing
2. facial exercises
3. incompatible behaviors
4. audio tape relaxation exercise

❺ Stress simulation exercise
❻ What to do about teeth clenching at night

III. Lesson Material:

You should have all the following material in your manual.

❶ Weekly Facial Pain Diary
❷ Oral Habits Diary
❸ Oral Habits Frequency Card
❹ Relaxation Recording Sheet

❶ Reminder to Send in Weekly Pain Measures and Oral Habits Diary

The first procedure every week will be to send in weekly pain ratings from the previous week. Include the Weekly Pain Diary and the Oral Habits Diary.

❷ Question Review and Troubleshoot Problems

Review homework, paying particular attention to the oral habits diary for times when you were able to use facial exercise and/or deep breathing as incompatible response in stressful situations

Prior to starting each lesson you should talk with the therapist, during your weekly time, or anytime you have a question, and discuss any problems that you may be having with record keeping.

During your weekly correspondence with the therapist, be sure to bring up any problems that you have had with any of the exercises, etc. The therapist will work with you weekly to ensure that you and comfortable with the exercises and feel that you are completing them correctly. The therapist will also check to see that recording keeping is going smoothly.

Remember to tell the therapist about any difficulties that you had with completing the exercises. What muscle groups were the most problematic? Was it difficult to recreate stressful situations during the role play exercises or during habit reversal?

Remember that facial exercises and deep breathing should be used as incompatible behaviors to your oral habits. It is important to use facial exercises and deep breathing to prevent or interrupt oral habits. Did you find these exercises helpful? What can be done to make them more beneficial for you? Remember to discuss these issues with the therapist

anytime they arise, or during the weekly contact. Your oral habits diary should reflect the use of these incompatible behaviors. For example, under the Behaviors column, the diary should note that you noticed you were biting your lip, but then you did the facial exercises to disrupt the behaviors.

❸ Utility of Negative Practice

We want you to examine a situation where you were able to use competing responses to address oral habits in stressful situations. Pinpoint a specific situation from your oral habits diary. Now we want you to ask questions like, "where did you first notice tension and/or pain", "were you able to apply facial exercises and/or deep breathing", and "at what point did you apply these techniques". You need to reward or reinforce yourself for being able to utilize competing responses in these situations. You can do this in a number of ways. You can simply tell yourself "Good job. You stopped the pain before it got started". Another option is to buy yourself something small to reward yourself for successfully dealing with a stressful situation. If you still don't feel comfortable using the competing responses, had difficulty implementing them in the particular situation, or did not get the desired results (reduction in tension and pain), then we need to examine these issues. There are a number of problems that could be responsible for this. Some of these might include the following:

Problem: You don't feel confident using the techniques.
Possible Solution: Maybe taking a step back and doing some more practice exercises at home will help you feel more confident.

Problem: You still have difficulty detecting when you are engaging in oral habits.
Possible Solution: It is possible that you may want to examine your descriptors of your oral behaviors. Another possibility is that you may want to try some more negative practice exercises to become more attentive to your oral behaviors and the tension level that they create.

Problem: You forget to use the competing responses in stressful situations.
Possible Solution: Try some more role plays or rehearse in your mind the situations where you forget to use competing responses when engaging in oral habits and implement the competing responses in these situations. These will help remind you to implement them in stressful situations.

Problem: You were unable to develop a good competing response for your particular oral habits.
Possible Solution: Go back to Lesson 4 and identify your difficulty with the instructions and then consult the therapist. It is possible that you do not have a unique competing response for your particular oral habit(s). Many people find that taking 3 deep breaths and focusing on keeping their 'lips together, teeth apart' are sufficient.

Problem: You do not get any relief from the exercises or the competing responses.
Possible Solution: You should not expect to get full relief immediately. Hopefully by this point in the treatment program you are experiencing some decrease in your average pain ratings as a result of a combination of all the techniques you've learned thus far. The use of a competing response to replace your pain inducing oral habits is one piece of the intervention. If you are "catching" yourself more frequently the treatment is working. Persist in detecting and stopping your destructive oral habits and you should begin to see some improvement.

❹ Practice Competing Responses

Remember that practice is the key to successfully mastering the relaxation techniques that we've learned so far. Therefore, we encourage you to continue practicing the following exercises that are the building blocks of this program.

Natural Breathing:

a) inhale through the nose and exhale through the mouth.
b) fill the lungs from bottom to top in a slow fluid motion.
c) hold your breath for a few seconds and exhale completely.

Facial Exercises:
Three Facial Muscle Groups:

1. Forehead - arch eyebrows as in a surprised look.

2. Eyes, Nose, Cheeks -shut eyes tightly while you crinkle up your nose like something smells bad.

3. Jaw, Mouth and Front of Neck - bite gently on the molars and make an very exaggerated frown.

Review and practice the relaxation audio tape.

Since this activity is still relatively new to you, continue to practice 3-4 times per week. Remember the basic rules outlined in Lesson 4. It is likely that you will still have some muscle groups that are more difficult to relax than others. This is normal. Just continue to work on all the muscle groups and a little extra practice on the difficult ones.

Practice Other Incompatible Behaviors:
In Lesson 4 we developed several incompatible behaviors to use when you recognize that you are engaging in one of your oral habits. Refer back to Lesson 4 and practice using these incompatible behaviors when you engage in your oral habits.

5 Stress Simulation and Reaction

One of the keys to oral habit reversal is being able to recognize the signs of tension and correctly utilize competing responses and facial exercises **before** the onset of pain. One way to do this is to actually re-create a stressful situation at home which evokes muscle tension and muscle hyperactivity similar to that evoked in the real life situation.

It is important to note that we don't want to create any pain with this exercise. We are seeking to initiate maladaptive oral habits so that we can use the sounds and sensations associated with the tension as a cue to engage in facial exercises and/or deep breathing. Thus, while the original maladaptive oral behavior is present, the facial exercise is the predominant behavior and will override the maladaptive oral habit. Initiating maladaptive oral habits through role play exercises during this lesson will not only increase your awareness of sensations associated with this behavior but will also allow you to practice shifting to facial exercises or deep breathing as soon as you become aware of increased tension in the jaw muscles. This type of practice will eventually enable the facial exercises and/or other competing responses and relaxation techniques to prevent the maladaptive oral habits.

The next thing you need to do is to think of a situation, preferably from your oral habits diary, which resulted in facial pain. So go ahead and examine your weekly oral habits record and find a situation like this if one does not immediately come to mind. Now, spend a few minutes recreating the situation on a piece of paper. Note the antecedents, those things that come before the actual pain, like what type of stressful situation, etc.. The actual oral behaviors and their consequences are pretty clear. When you're done writing a pretty detailed description of the situation, start to rehearse the situation in your mind. Do the best that you can to make this situation seem as realistic as possible. It is likely that you will begin to feel tension in your facial muscles simply by recreating the stressful situations.

Now, we want you to exaggerate the tension for a few seconds by further tensing the facial muscles as shown in the previous negative practice exercise.

Now, we want you to implement facial exercises to create feelings of relaxation in the facial muscles. Use the facial exercises and letting the jaw go slack as competing responses for your particular oral habit(s). In situations where the facial exercises are not appropriate (e.g. business meetings, when talking to a client, etc.), use deep breathing with dropping the tension from the shoulders and letting the jaw go slack instead.

If you are having any trouble with this role play exercise or with implementing the competing responses or facial exercises, please feel free to contact the therapist for assistance. This is a common problem and the therapist can give you helpful hints to solve this problem.

6 Teeth Grinding at Night

For some people the main cause of their pain seems to be nocturnal bruxing (nighttime teeth grinding). If your worst pain of the day is when you awaken and your jaw feels tight and sore, in all likelihood you are grinding your teeth at night. An effective intervention for this source of facial pain is similar to the procedures for reversing daytime teeth clenching and other daytime oral habits, which is becoming aware of your clenching. You may wonder how you can learn to be aware of your nighttime teeth grinding, much less interrupt and reverse this pain inducing habit, while you are sleeping. It's easier than you think.

You can "program" yourself to not grind your teeth while sleeping by giving yourself instructions right before you go to bed. Using the negative practice exercise from Lesson 4 you can become more aware of your habits by actually practicing the same habit you are trying to break. Before retiring for the night sit on the edge of the bed, take five minutes, and gently "practice" teeth grinding. Gently grate your teeth against each other and notice, in detail, what sounds you create and what sensations you experience

on you teeth, gums and tongue. Do not induce pain. Practice gently and notice all the sensations you create, this will in fact increase your awareness of the habit while you sleep.

Now, at the same time repeat to yourself instructions to stop the grinding while asleep. For example, say to yourself "when I feel my teeth grating against each other like this while I sleep I must stop" or "when I hear these types of sounds in my head while I sleep I must stop grinding." You might feel like this cannot make you more aware of the habit because you will be asleep but indeed your body seems to be more aware of the habit and your preprogrammed instruction helps you to stop even when you don't remember "consciously" stopping when you awaken in the morning.

Practice this exercise right before you go to bed at night.

1) Sit down
2) Read description of your oral habit(s)
3) Deliberately engage in your oral habit (Do not use so much force as to cause pain. If you feel pain, STOP).
4) Pay attention to all the sensations you experience
5) Say "***Stop***" out loud if you can, or just shout "***Stop***" to yourself
6) Relax your jaw muscles.

PRACTICE EXERCISES: LESSON FIVE

1. **Pain Diaries, Oral Habits Frequency Card, and Oral Habits Diary** - continue these exercises as usual.

2. **Deep Breathing** - continue using deep breathing as an incompatible response to oral habits in stressful situations.

3. **Facial Exercises** - continue to practice 3 to 5 times per day and as an incompatible response to oral habits in stressful situations.
Muscle groups for facial exercises:
   1. forehead -- arch eyebrows
   2. eyes, nose, cheeks -- shut eyes tightly, crinkle nose
   3. mouth, jaw, neck -- Bite down gently on the back teeth make an exaggerated frown by drawing the corner of the lips down

4. **Review and practice the relaxation exercise on the audio tape.** Although we ask you to practice this exercise several times per week right now, you will not have to practice it this often in the future. As you become better at detecting tension in your muscles, you can reduce the number of times you practice.

5. **Practice simulating the use of these exercises in stressful situations.** We want you to know exactly how to implement the techniques that you've been learning in a stressful situation. Therefore, practice the exercise as it is described in this chapter. Practice as often as necessary to make you feel comfortable with implementing the different techniques when you're under stress.

6. **Negative Practice for nocturnal bruxing** - Role play with negative practice. Similar to that done during this exercise, practice engaging in your oral habits and stressful situations (often situations from the oral habits diary) and then practice using the competing responses that we have been practicing.

Relaxation Recording Form

Technique Practiced breathing, PRT facial exercises, competing responses	SUDS Level Before Practice	SUDS Level After Practice

SUDS= Subjective Units of Distress:
On a scale from 1 to 10, rate the intensity of your feelings (including pain).
1= no distress or facial pain while 10=severe distress or incapacitating pain.

Oral Habits Recording Sheet

Day / Time	Antecedents	Behaviors-Actions Thoughts/Emotions	Consequences

Under the consequences section of each event, add a SUDS rating. **SUDS**= Subjective Units of Distress: On a scale from 1 to 10, rate the intensity of your feelings (including pain). 1= no distress or facial pain while 10=severe distress or incapacitating pain.

Assessment for Lesson #5

Please respond to the following questions regarding material from Chapter 5 of the Facial Pain Treatment Manual by answering 'True' or 'False' below the question and then mailing this material back to us with your weekly pain diary.

1. If you don't feel confident with a particular technique, we recommend abandoning this particular technique.

2. One way to become more aware of your oral habits is by deliberately engaging in the behavior.

3. If I haven't gotten any relief from my pain yet, I need to hang with the program and practice the techniques a little more.

4. The reason we ask you to practice most of the exercises each week is to become proficient with using them.

5. If each exercise does not work perfectly and relieve all my pain, I must be doing something wrong.

6. The goal of the stress reactivity exercise is to help you plan how you will implement one or more of the techniques we've taught you in a stressful situation.

7. Grinding your teeth at night is a very common problem.

8. It is impossible to stop yourself from grinding your teeth at night.

9. By 'practicing' grinding your teeth at night, you teach your body to become aware of the grinding, whether you are asleep or awake.

10. For best results with nocturnal bruxing, practice grinding right before you go to bed.

LESSON SIX

I. Procedures:

≤ Read lesson 6,
≤ Practice exercises,
≤ Complete Weekly Pain Diary and Oral Habits Diary
≤ Contact the therapist during weekly time slot to ask any questions or discuss problems,
≤ Take the short quiz on lesson 6
≤ Remember to complete and mail in weekly pain diary and relaxation sheet.
≤ Proceed to the final lesson 7

II. Lesson Objectives:

❶ Reminder to send in weekly assessment material
❷ Question review and troubleshoot problems that you may be having with record keeping,
❸ Troubleshoot problems encountered using competing responses
❹ Reinforce the use of deep breathing and facial exercises as incompatible with oral habits in stressful situations (examine OH diary for this information).
❺ Visualization exercise
❻ Practice competing responses: deep breathing, relaxation, facial exercises and unique competing responses.

III. Lesson Material:

You should have all the following material in your manual.

❶ Weekly Facial Pain Diary
❷ Oral Habits Diary
❸ Oral Habits Frequency Card
❹ Relaxation Record Sheet w/ Muscle Groups

❶ Reminder to Send in Weekly Assessment Material

The first procedure every week will be to send in weekly pain ratings from the previous week. Include the Weekly Pain Diary and the Oral Habits Diary.

❷ Question Review and Troubleshoot Problems

Prior to starting each lesson you should talk with the therapist, during your weekly time, or anytime you have a question, and trouble shoot any problems that you may be having with record keeping.

During your weekly correspondence with the therapist, be sure to bring up any problems that you have had with any of the exercises, etc. The therapist will work with you weekly to ensure that you and comfortable with the exercises and feel that you are completing them correctly. The therapist will also check to see that recording keeping is going smoothly.

❸ Troubleshoot Problems Using Competing Responses

As we've stated before, there are numerous problems often encountered when using the competing responses. Now that you've had a chance to practice some of the competing responses, some additional problems may have come up, so let's review some of the problems we've already discuss. Some of these include the following. As always, we encourage you to use the therapist to help you solve problems that are specific to your case.

Problem: You don't feel confident using the techniques.
Possible Solution: Maybe taking a step back and doing some more practice exercises at home will help you feel more confident.

Problem: You still have difficulty detecting when you are engaging in oral habits.
Possible Solution: It is possible that you may want to examine your descriptors of your oral behaviors. Another possibility is that you may want to try some more negative practice exercises to become more attentive to your oral behaviors and the tension level that they create.

Problem: You forget to use the competing responses in stressful situations.
Possible Solution: Try some more role plays and implement the competing responses in these situations. These will help remind you to implement them in stressful situations.

Problem: You do not get any relief from the exercises or the competing responses.
Possible Solution: You should not expect to get full relief immediately. Hopefully by this point in the treatment program you are experiencing some decrease in your average pain _____ as a result of a combination of all the techniques you've learned thus far. The use of a competing response to replace your pain inducing oral habits is one piece of the intervention. If you are "_____" yourself more frequently the treatment is working. Persist in detecting and stopping your destructive oral habits and you should begin to see some improvement.

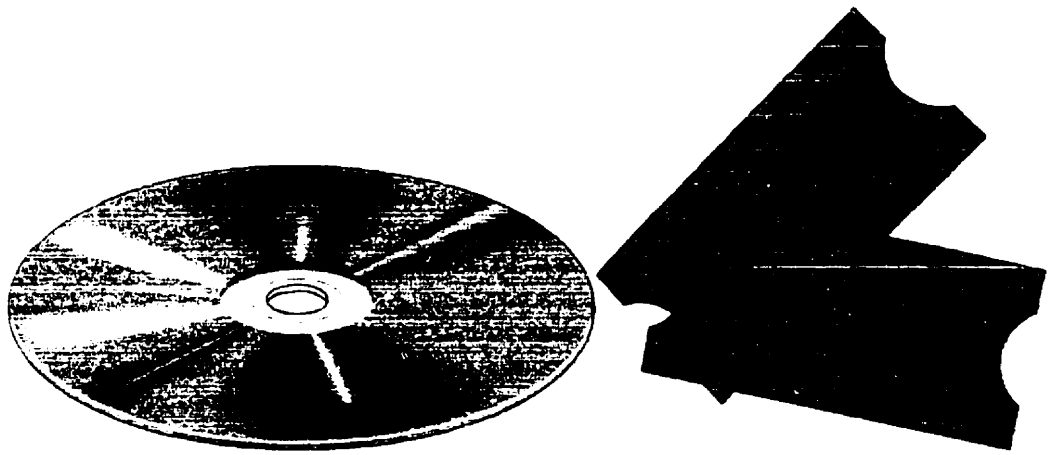
Problem: You were unable to develop a good competing response for your particular oral habits.
Possible Solution: Go back to Lesson ___ and identify your difficulty with _____ and then consult the therapist. It is possible that you do not have a unique competing response for your particular oral habit(s). Many people find that taking 3 deep breaths and focusing on keeping their 'lips together, teeth apart' are sufficient.

4 Reward Yourself for Using Deep Breathing, PRT, and Incompatible Behaviors

By this time you should be using the competing responses pretty consistently when confronted with oral habits and stressful situations that you've found that produce oral habits. We want you to reward and reinforce yourself for using these competing responses in the stressful situations to reduce the impact of oral habits. Some of the following material we have mentioned in other lessons and in different contexts, but we want to further elaborate. Rewards can take several forms:

a) Rewarding yourself with positive statements is can be very effective and definitely cost efficient for individuals on a limited budget. After you've been in a situation that has been stressful and you've successfully used the competing responses, tell yourself that you've done a good job, e.g. "Good job! This situation usually makes your jaw sore for the rest of the day", or "Great job! I knew I could handle that situation".

b) Set goals for yourself and then reward yourself for success. A past client of ours would buy a new CD after every successful week of practice (completing the recommended number of practice sessions).



c) Use a material item to reward your success dealing with a situation. Treat yourself to a new article of clothing, lunch at a restaurant, some leisure time, or some other small material item you may want.

d) After practicing PRT and deep breathing for the suggested number of times during the week, you may want to treat yourself to a movie.

e) If you can reduce the amounts of medication you use, you may want to take a Saturday afternoon to garden, or participate in any other hobby you might have.

5 Visualization Exercise

Read the following introduction and then refer to the next page for a detailed description of how to complete this task.

Visualization involves using mental images to train your body to relax or attain some pain reduction. The more vivid the images you can generate, the more effective visualization will be. You can improve how 'real' the visualization experience is through practice. If you have difficulty creating vivid images during the lesson, you can improve your skill through practice visualizing basic shapes and colors. The following exercise simply involves imagining images that change from one shape or color to another (e.g. a red triangle turning into a red square then a blue square). When you become more comfortable with the technique, you can apply your visualization skills to relaxation and pain reduction exercises. For example, you can imagine relaxing scenes, painful muscles turning from hot to cold (or red to blue), or your pain being washed away by the ocean. As with all different relaxation exercises, different images work differently for different people and it is up to you to discover what is effective for you.

Visualization Exercise

1. First we are going to start off practicing some basic visualization skills. Start with your eyes closed and follow the instructions below.

    a) Start out by imagining a circle. Can you picture the circle? Concentrate on this until you can picture the circle.

    b) When you can picture a circle, then imagine the circle turning into a square. Can you picture the square? Concentrate until you can picture the square.

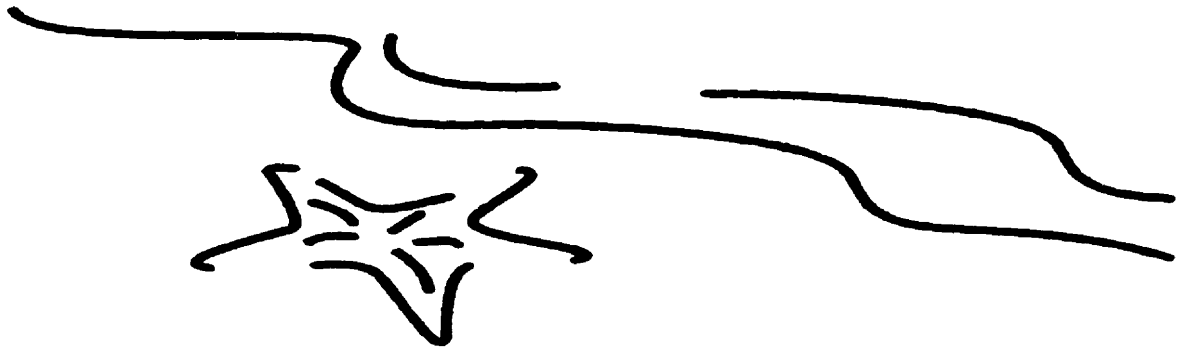
    c) Now that you have a picture of the square in your mind, imagine a red square. Can you see the red square in your mind? Focus on this until the image becomes clear in your mind.

    d) You should be picturing a red square now. Now imagine the red square turning blue, like tension is leaving the red square and it is turning blue.

    e) Now let's focus on another scene. Imagine that you are in a place that you find very relaxing. Can you picture this place? Some people imagine the ocean, the mountains, their back yard, a nice warm sunny day, whatever makes you feel relaxed.

    f) Picture the place that you find relaxing. Now start to elaborate the picture by adding in details to the picture. What color is the sky? What do you see yourself doing? What sensations do you feel? What are you thinking about in the image? Think of all the details that you can include in the image. Make the picture as detailed as possible.

    g) If you have trouble imagining the scene, go back and practice the shapes some more before moving on to the relaxation scene. Once you become good at imagining the shapes, try imagining the scene again.



6 Practice Competing Responses

Natural Breathing:

a) inhale through the nose and exhale through the mouth.
b) fill the lungs from bottom to top in a slow fluid motion.
c) hold your breath for a few seconds and exhale completely.

Facial Exercises:

Three Facial Muscle Groups:

1. Forehead - arch eyebrows as in a surprised look.
2. Eyes, Nose, Cheeks -shut eyes tightly while you crinkle up your nose like something smells bad.
3. Jaw, Mouth and Front of Neck - bite gently on the molars and make an very exaggerated frown.

Review and practice the relaxation audiotape.

Since this activity is still relatively new to you, continue to practice 3-4 times per week. Remember the basic rules outlined in Lesson 4. It is likely that you will still have some muscle groups that are more difficult to relax than others. This is normal. Just continue to work on all the muscle groups and a little extra practice on the difficult ones.

Practice Other Incompatible Behaviors:

In Lesson 4 we developed several incompatible behaviors to use when you recognize that you are engaging in one of your oral habits. Refer back to Lesson 4 and practice using these incompatible behaviors when you engage in your oral habits.

PRACTICE EXERCISES: LESSON SIX

1. Pain Diaries, Oral Habits Frequency Card, and Oral Habits Diary - continue these exercises as usual.

2. Deep Breathing - continue using in stressful situations and as an incompatible response to oral habits in stressful situations.

3. Facial Exercises - continue to practice 3 to 5 times per day and use in stressful situations as an incompatible response to oral habits. Record how often you are able to practice this exercise, and the results achieved in the Relaxation Recording Form.

Muscle groups for facial exercises:

1. forehead -- arch eyebrows

2. eyes, nose, cheeks -- shut eyes tightly, crinkle nose

3. mouth, jaw, neck -- Bite down gently on the back teeth make an exaggerated frown by drawing the corner of the lips down

4. Awareness Training Exercise - Similar to the exercise in the chapter, we want you to practice recognizing your oral habits. We want you to practice the same exercise that we did in the Lesson 4. Use your written description of your oral habits to help you 'recreate' the oral habit(s). Then imagine yourself in stressful situations similar (or the same) as those you describe in your oral habits diary. Engage in the oral habit and then tell yourself to ***"Stop"*** engaging in the oral habit. Then utilize the competing responses (facial exercises, letting the jaw go slack, etc.) to help stop the oral habit and reduce tension from the oral behaviors.

5. Negative Practice for nocturnal bruxing - Role play with negative practice. Similar to that done during this exercise, practice engaging in your oral habits and stressful situations (often situations from the oral habits

diary) and then practice using the competing responses that we have been practicing.

6. **Relaxation audio tape-** Although we ask you to practice this exercise several times per week right now, you will not have to practice it this often in the future. As you become better at detecting tension in your muscles, you can reduce the number of times you practice.

7. **Visualization** - practice the visualization techniques during the week.

8. **Remember to send in weekly pain diary and relaxation recording sheet.**

Relaxation Recording Form

Technique Practiced breathing, PRT facial exercises, competing responses	SUDS Level Before Practice	SUDS Level After Practice

SUDS= Subjective Units of Distress:
On a scale from 1 to 10, rate the intensity of your feelings (including pain).
1= no distress or facial pain while 10=severe distress or incapacitating pain.

Oral Habits Recording Sheet

Day / Time	Antecedents	Behaviors-Actions Thoughts/Emotions	Consequences

Under the consequences section of each event, add a SUDS rating. **SUDS**= Subjective Units of Distress: On a scale from 1 to 10, rate the intensity of your feelings (including pain). 1= no distress or facial pain while 10=severe distress or incapacitating pain.

Assessment for Lesson 6

Please respond to the following questions regarding material from Chapter 6 of the Facial Pain Treatment Manual by answering 'True' or 'False' below the question and then mailing this material back to us with your weekly pain diary.

1. If I don't feel confident about how to use the various techniques then I need to do a little more practice.

2. Six weeks of treatment have passed and I have not achieved full reduction in facial pain, so I must be a total failure at the treatment program.

3. Reinforcement is one way that I can help insure that my new behaviors are maintained.

4. Since I'm not rich, other ways to reward the use of competing responses can include taking some time to do what I enjoy.

5. One of the most effective ways to reward oneself for effective attempts at using competing responses can include positive self-statements (particularly because they're free).

6. Visualization exercises are something that can only work if you believe in those weird 'Eastern' religious practices.

7. Visualization works through creating mental images that help calm and relax the body.

8. There are simple exercises that you can do that can help you expand your imagination and help to create relaxing images.

9. The most effective images that you can create are often the personal images that remind you of a relaxing place.

10. The only reason that we have you keep practicing the various techniques is to bore you to death.

LESSON SEVEN

I. Procedures:

- Read lesson 7,
- Practice exercises,
- Complete Weekly Pain Diary and Oral Habits Diary
- Contact the therapist during weekly time slot to ask any questions or discuss problems,
- Take the short quiz on lesson 7,
- Remember to mail in the weekly pain diary and relaxation recording sheet
- Contact the therapist to complete a follow-up Stress Reactivity Profile.

II. Lesson Objectives:

1. Reminder to send in weekly assessment material
2. Question review and troubleshoot problems that you may be having with record keeping,
3. Review the past 6 sessions and give your feedback
4. Continue to practice these skills,
5. Relapse prevention
6. Complete the treatment rating form and return in unmarked envelope (you DO NOT put your name on this form).
7. Explanation of follow up assessment.

III. Lesson Material:

You should have all the following material either in your manual, or in the supplemental form booklet.

1. Weekly Facial Pain Diary
2. Oral Habits Diary
3. Oral Habits Frequency Card
4. Relaxation Recording Sheet
5. Treatment rating form

❶ Send in Pain Rating Forms

The first procedure every week will be to send in weekly pain ratings from the previous week. Include the Weekly Pain Diary and the Oral Habits Diary.

❷ Question Review and Troubleshoot Problems with Record Keeping

Prior to starting each lesson you should talk with the therapist, during your weekly time, or anytime you have a question, and trouble shoot any problems that you may be having with record keeping.

During your weekly correspondence with the therapist, be sure to bring up any problems that you have had with any of the exercises, etc. The therapist will work with you weekly to ensure that you and comfortable with the exercises and feel that you are completing them correctly. The therapist will also check to see that recording keeping is going smoothly.

❸ Review of the Past 6 Lessons

Overview of Previous Chapters:

A. Self monitoring and Awareness:

We've already reviewed how oral habits contribute to facial pain. Remember that many people do not pay attention to their oral habits, and unless people are aware of these habits, they can not change these behaviors.

B. Deep breathing:

Deep breathing is a key to relaxation. You need to be able to take 3 deep breaths using the proper form whenever you want (in

stressful situations). Therefore, this is a skill that you need to be good at. If you still don't feel comfortable with deep breathing, go back and review the sections on deep breathing, and practice more deep breathing.

C. Facial Exercises:

Facial exercises are important to help relax the muscles of the face that tend to produce the most pain. These exercises can be effectively used to help reduce facial tension before, during and after stressful situations. If you don't feel comfortable with these exercises, review the sections on utilizing these exercises, and try to practice these exercises some more. If you still have problems, ask the therapist what you can do, or ask him to give you some alternative exercises that you can do.

D. Relaxation Audio Tape:

The relaxation audiotape was used to help with your general, overall tension level, and not specifically your jaw or facial muscles. This technique has been shown to be highly effective in helping people to reduce the level of tension in their body.

E. Negative Practice:

This technique was one that we used to help you become more aware of the various oral habits that you are engaging in. When you actively engage in your oral habits and pay attention to it, your ability to detect your oral behaviors in other situations (where you might not normally be aware of them) will be better. Then, when you can accurately detect your oral behaviors, you can use the competing responses that you've learned.

F. Visualization:
Visualization is another technique that you can use to help with relaxation. This technique may take a while for you to master, so you may still need a couple of weeks to practice this technique before using it to help with relaxing.

4 These Techniques are Skills and Need to be Practiced

It is important to note that these techniques are skills and this means that they can be learned and must be practiced in order to master them.

Just like playing the violin is a skill, no one starts off playing like a virtuoso. An individual must practice and practice the same things over and over until the skills that were initially difficult become automatic.

You can train yourself in the same way by practicing deep breathing, habit reversal and visualization. It is important to focus on detecting increased muscle tension and oral habits so that in time when you notice the first hint of tension you can automatically take a deep breath, drop your shoulders, and let your jaw go slack.

As we said before, some of these skills are ones that you need to keep practicing and using daily, like deep breathing. Other skills, like PRT can be discontinued and restarted should you experience increases in pain and tension again. But remember, many of these techniques are not ones that you will become good at overnight. In addition, if you keep practicing these techniques, it is likely that you will continue to gain benefits above and beyond those you've reached while in the treatment program. That is, you are likely to continue to get further tension and pain reductions through increased practice after this 7 week treatment program is over. For example, for PRT to produce its full effects, it often takes 4-6 weeks. Therefore, if you haven't improved as much as you had hoped, keep practicing. If you do not achieve any improvements after 6 weeks of faithful practice and devotion, please call us, and we will give you an appropriate referral.

We encourage you to continue practicing a shorter version of each of the techniques even if you find that your pain has been reduced significantly.

Natural Breathing:

a) Inhale through the nose and exhale through the mouth,
b) Fill the lungs from bottom to top in a slow fluid motion,
c) Hold your breath for a few seconds and exhale completely.

Facial Exercises:

1. forehead -- arch eyebrows

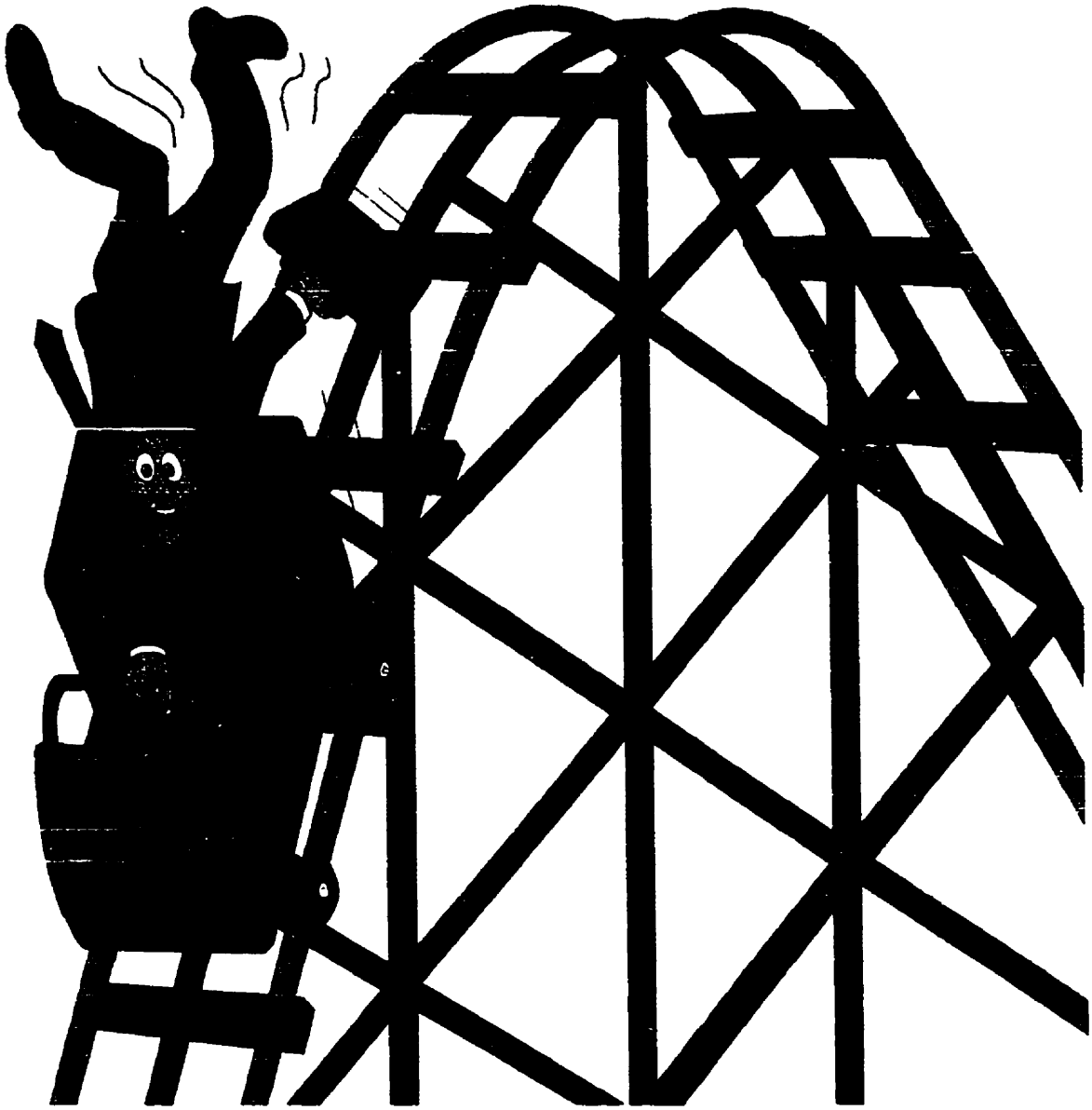
2. eyes, nose, cheeks -- shut eyes tightly, crinkle nose

3. mouth, jaw, neck -- Bite down gently on the back teeth make an exaggerated frown by drawing the corner of the lips down

Relaxation AudioTape: Continue to practice this relaxation method as necessary to help keep facial pain in check.

5 Relapse Prevention

It is almost inevitable that there will be ups and downs with your facial pain. The important thing to remember is that once you've learned these skills you can use them as much or as little as necessary to deal with your pain when it does reoccur.



When you encounter pain again, which is likely to occur, it does not mean that you are going to be in the same pain that you were in before. A short, temporary lapse in the way you deal with the pain needs to be considered.

You need to know that there is a distinct difference between a lapse and a relapse. A lapse is when you go back to your old ways ***temporarily***. This is very common and will happen to almost everyone that completes a treatment program like this. Therefore, it is nothing to get to distressed

about. A relapse, however, is a ***return*** to your full-blown pattern of behavior. This means that you've given up on the treatment program and settled back into a routine of doing the same things that caused you pain in the beginning.

There are several different situations where lapses are likely to occur. Can you think a few of these different situations? Please list some of them below.

Other possible situations might include:

a) ... when you are emotionally upset

b) ... interpersonal conflict

c) ... with the kids, on the job, driving, social pressure

Coping with high risk situations:

There are many different and effective ways to address lapses in behavior and prevent a full relapse. What are some of the solutions that you can think of to address possible relapse:

Some additional solutions might include:

A. Avoid-
Try to avoid situations where you know it is impossible for you to prevent oral habits, stress, or pain.

B. Problem-solve-
Try to consider what you will do in problem situations in advance. This will allow you to be ready to deal with these situations when they arise.

This can be accomplished by.....
-- listing details,
-- think of solutions,
-- select solution(s),
-- check to be sure you are implementing the solution(s).

C. Self-instructions-
When in high risk situations, give yourself internal instructions (e.g. I can handle this situation, I just need to breath right. Now let your jaw relax, etc.).

The following are some techniques to prevent a lapse from becoming a relapse.

A. Make self observations-
(Are you doing the things that you want to be doing in stressful situations? Is your jaw getting sore and fatigued during stressful situations?)

B. Self contract what you will do if you lapse-
(e.g. If I experience facial pain again for more than two straight days, I will start practicing deep breathing, and review old lessons from this book, etc.).

C. A reminder card -
Use this at work or at home (e.g. posted on the refrigerator, or on your desk at work) to remind yourself to refrain from oral habits, and/or engage in competing responses.

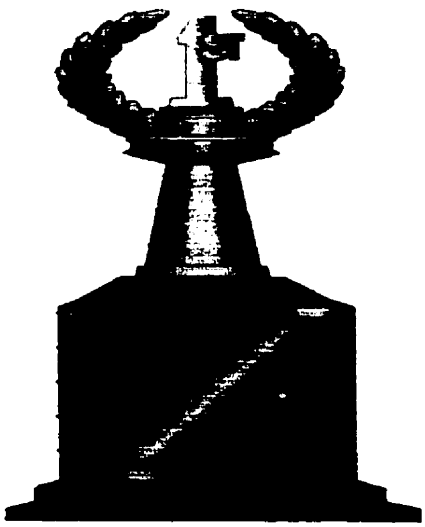
6 Complete the Follow-up Stress Reactivity Profile

Following the completion of the treatment program we would like to have you complete another Stress Reactivity Profile. But this time you can do it at home, since all you need to do is complete the written portion of the assessment. The reason we ask you to do this is to help us determine what has changed since the beginning of the treatment program. We expect that our treatment will have effects on several different areas of your life and this is our chance to find out. The therapist will be checking in with you during lesson #7, and will send out the post-treatment assessment as soon as you complete lesson #7. As soon as this assessment is complete and returned to us, you will be given the $40 check that we promised.

Additionally, we will want to keep in contact with you periodically over the next year or so, to see how your doing and determine the lasting effects of our treatment program. We will ask you to participate in the written portion of the Stress Reactivity Profiles in the future, and in exchange for your participation, we will pay you a small fee for your help.

Thanks for participating in our treatment program. We sincerely hope that we have helped you minimize your facial tension and pain.

CONGRATULATIONS



PRACTICE EXERCISES: LESSON SEVEN

1. Pain Diaries, Oral Habits Frequency Card, and Oral Habits Diary - continue these exercises as usual.

2. Deep Breathing - continue using in stressful situations and as an incompatible response to oral habits in stressful situations.

3. Facial Exercises - continue to practice 3 to 5 times per day and as an incompatible response to oral habits in stressful situations.

Muscle groups for facial exercises:

1. forehead -- arch eyebrows

2. eyes, nose, cheeks -- shut eyes tightly, crinkle nose

3. mouth, jaw, neck -- Bite down gently on the back teeth make an exaggerated frown by drawing the corner of the lips down

4. **Relaxation Tape** - Review this tape and practice the exercises.

5. **Negative Practice** - Role play with negative practice.

6. **Visualization exercise** - continue practicing the visualization exercise.

Relaxation Recording Form

Technique Practiced breathing, PRT facial exercises, competing responses	SUDS Level Before Practice	SUDS Level After Practice

SUDS= Subjective Units of Distress:
On a scale from 1 to 10, rate the intensity of your feelings (including pain).
1= no distress or facial pain while 10=severe distress or incapacitating pain.

Oral Habits Recording Sheet

Day / Time	Antecedents	Behaviors-Actions Thoughts/Emotions	Consequences

Under the consequence section of each event, add a SUDS rating. **SUDS**= Subjective Units of Distress: On a scale from 1 to 10, rate the intensity of your feelings (including pain). 1= no distress or facial pain while 10=severe distress or incapacitating pain.

Assessment for Lesson 7

Please respond to the following questions regarding material from Chapter 7 of the Facial Pain Treatment Manual by answering 'True' or 'False' below the question and then mailing this material back to us with your weekly pain diary.

1. During the past 6 Lessons, we've focused on all but one of the following techniques. Circle the one we did NOT focus on?
   a) PRT
   b) Visualization
   c) Biofeedback
   d) Facial exercises
   e) Negative practice
   f) Deep breathing
   g) Awareness training

2. Of the techniques that we covered, the most important one is likely to be awareness training.

3. Visualization involved imagining you conquering stressful situations.

4. The post-assessment follow-up is to help us determine if our treatment had any impact on your muscle tension.

5. A lapse is when I accidentally engage in some of my old behaviors for a short period of time.

6. A relapse is when you go back to the old way of dealing with stress.

7. There are many situations that could increase my risk for falling back into my old way of doing things. One of these might be when I'm under extreme stress from work.

8. One way to help prevent a relapse is take a long vacation in the Bahamas every time you begin to feel stressed out.

9. Making self-observations of your habits and pain are important to prevent relapse.

VITA
Don Townsend

Education:

Virginia Commonwealth University; Richmond, VA, August 1994- December 1999.
Ph.D. in Clinical Psychology (APA Accredited).

Mankato State University; Mankato, MN, September 1992 - June 1994.
M.A. in Clinical Psychology.

University of Minnesota; Minneapolis, MN, December 1991.
B.A. in Psychology, Minor Biology.

Clinical Experience:

Rush-Presbyterian-St. Luke's Medical Center, Chicago, Illinois, July 1998 to July 1999. APA Approved Clinical Internship in Health Psychology. ***Rotations included:***
Geropsychology / Rehabilitation: Responsible for assessing cognitive and emotional functioning, providing treatment recommendations to the multi-disciplinary treatment team. Interventions included relaxation training, pain management, counseling grief and loss, behavior management. Patient diagnoses include Parkinson's Disease, Multiple Sclerosis, CVA, joint replacement, etc. Supervisors: Martita Lopez, Ph.D., Bruce Rybarczyk, Ph.D.
Sleep Disorders Medicine: Responsible for inpatient and outpatient evaluation and treatment of sleep related complaints. Diagnoses included obstructive sleep apnea, insomnia, and parasomnias. Supervisor: Edward Stepanski, Ph.D., ABSM.
Psychosocial Oncology: Responsible for assessing emotional functioning in individuals receiving bone marrow transplants, and cancer treatments, providing treatment recommendations to the multi-disciplinary treatment team. Interventions included relaxation training, pain management, counseling grief and loss. Supervisor: Sue Yellen, Ph.D.
Outpatient Psychotherapy: Responsible for initial assessment, psychological testing, report writing, individual and group psychotherapy, behavior management & crisis intervention. Focus is on short-term Cognitive Behavioral interventions. Supervisor: Robert Aber, Ph.D.
Neuropsychology: Responsible for neuropsychological assessments for select patients presenting with diverse neurological disorders. Supervisor: David Garron, Ph.D., ABPP.

Behavioral Health Institute at the Center for Psychological Services and Development, Virginia Commonwealth University, May 1995 to July 1998, an outpatient treatment facility providing psychological services to the Richmond Metropolitan area. Responsibilities included initial assessment, psychological testing, report writing, individual and group psychotherapy, behavior management & crisis intervention. Clientele are from diverse ethnic, and socioeconomic backgrounds. Presenting problems included chronic pain, anxiety disorders, mood disorders, substance abuse, and sexuality issues. Treatment included brief, short-term interventions. Supervisors: Sandy Gramling, Ph.D., Melanie McGrath, Ph.D., Steve Auerbach, Ph.D.

Center for Perinatal Addictions, at Virginia Commonwealth University, September 1997 to June 1998, an inpatient treatment facility for individuals with substance abuse disorders. Responsibilities: Initial intake assessment, intellectual and personality assessment, report writing. Supervisor: Sherry Richards, Ph.D.

Department of Juvenile Justice, State of Virginia, September 1997 to June 1998, a correctional center for juvenile offenders. Responsibilities: Initial intake and assessment report, including personality and intellectual assessment, report writing. Supervisor: William Brock, Ph.D.

Medical College of Virginia, Department of Rehabilitation Medicine, at Virginia Commonwealth University, September 1996 to June 1997, an inpatient treatment facility providing multidisciplinary care to individuals suffering from traumatic brain injuries, stroke or other neurological disorders. Responsibilities: Neuropsychological and intellectual assessment, interpretation, report writing, recommendations, consultation, assist with individual and group therapy, crisis intervention, behavior management. Integrated services within a multidisciplinary treatment team. Supervisor: Adrienne Witol, Psy.D.

Mankato State University, August 1993 to July 1994, provide group stress management for nursing staff in nursing homes in rural Minnesota. Responsibilities: Assess areas of need and conduct group stress management workshops. Intervention entailed short-term, cognitive behavioral techniques. Supervisor: Michael Fatis, Ph.D., LCP, DCT.

Community Care Corporation, January 1992 to July 1994, a residential treatment center for seriously and persistently mentally ill older adults. Responsibilities: Case management, counseling, supervise residents, supervise activities, crisis intervention and behavior management. Diagnoses included schizophrenia, and severe mood disorders. Supervisor: Louise Anderson, LCSW.

Reentry House, June 1993 to August 1993, residential treatment center for the seriously and persistently mentally ill. Responsibilities: Conduct individual and group psychotherapy, individual skills training sessions, diagnostic intake and assessment interviews, report writing, crisis intervention and behavior management. Diagnoses included schizophrenia and severe mood disorders. Supervisor: Markus Klimenko, M.A., LCP.

Welcome Home, Incorporated, January 1991to January 1992, a residential treatment center for mentally ill adults. Responsibilities: Counseling, supervise residents, recreational activities, and crisis intervention and behavior management. Diagnoses included schizophrenia, depression, bipolar disorder, anxiety disorders and eating disorders. Supervisor: Joanne Aronson, MSW.

Minnesota Independent Living Services, Incorporated, May 1989 to August 1994, a service supplying personal care aids to individuals with physical and/or developmental disabilities. Responsibilities: Assist with personal care for physically disabled clients. Supervisor: Duane Hansen and Mike Dryer.

Research Positions:

Research Assistant, Department of Gerontology, University of Nebraska at Omaha, November 1999 to present. Responsibilities: Assist with grant writing, project design, project management, participant recruitment, data analysis. Supervisor: Karl Kosloski, Ph.D.

Project Coordinator, $60,000 Grant from the American Heart Association to study diet, nutrition, and memory, Department of Psychology, Virginia Commonwealth University, July 1996- July 1998. Responsibilities: Project design, project management, participant recruitment, supervising interns, data collection and analysis, and manuscript writing. Supervisor: Elizabeth Fries, Ph.D.

Research Assistant, Department of Psychology, Virginia Commonwealth University, August 1994-July 1998. Responsibilities: Project design, project management, participant recruitment, intern supervision, data collection, and analysis for research in chronic pain, stress management and behavioral medicine. Supervisor: Sandy Gramling, Ph.D., LCP.

Research Assistant, Department of Clinical Psychology, Mankato State University, September 1992-June 1994. Responsibilities: Community recruitment of participants, assist in research design, data collection and analysis of projects related to aging and health psychology. Supervisor: Michael Fatis, Ph.D., LP, DCT.

Research Assistant, Department of Developmental Psychology, Institute for Learning and Disability Studies, University of Minnesota, January 1991-October 1991. Responsibilities: Data collection and analysis of aggression in Alzheimer's disease patients in local nursing homes. Supervisor: Travis Thompson, Ph.D., Director, Institute for Learning and Disability Studies.

Research Assistant, Department of Social Psychology, University of Minnesota, September 1989-October 1991. Responsibilities: Participant recruitment, data collection and analysis for a study investigating juror biases. Supervisor: Eugene Borgida, Ph.D.

Research Assistant, Department of Clinical Psychology, University of Minnesota, January 1991-March 1992. Responsibilities: Administer psychophysiological tests to individuals with schizophrenia, reviewing relevant literature and assisting with writing manuscripts. Supervisor, William Grove, Ph.D.

Teaching Experience:

Adjunct Faculty, Department of Psychology, Virginia Commonwealth University, December 1994-June 1998. Stress Management and Introductory Psychology. Class size ranged from 20-35 students. Responsibilities: Organizing classroom material, preparing syllabus, and lesson plans, lecturing and assigning grades for these undergraduate courses.

Teaching Assistant, Department of Psychology, Virginia Commonwealth University, August 1994-May 1995. Responsibilities: Lecturing, grading, and supervising students in Introductory Psychology laboratory classes. Classes entailed utilizing personal computers to study course material and conduct mock psychological experiments. Supervisor: Ray Archer, Ph.D.

Adjunct Faculty, Department of Psychology, Mankato State University, January 1994-May 1994, Introductory Psychology. Class size ranged from 50-75 students. Responsibilities: Organizing classroom material, preparing syllabus and lesson plans, lecturing and assigning grades.

Teaching Assistant, Department of Psychology, Mankato State University, August 1993- January 1994. Responsibilities: Assisting with Introductory Psychology, preparing lesson plans, lecturing and grading students. Supervisor: Kenneth Good, Ph.D., Chairman, Department of Psychology.

Publications:

Gramling, S.E., Ciocco, J., Grayson, R., and Townsend, D. (1996). Temporomandibular Disorder: Efficacy of an Oral Habit Reversal Treatment Program. Journal of Behavior Therapy and Experimental Psychiatry, 27 (3), 245-255.

Presentations:

Townsend, D., Gramling, S., Nicholson, R., and Buenaver, L. (1999 March). Treatment of Chronic Facial Pain Using a Minimal Therapist Contact Format. (Poster presented at the Annual Meeting of the Society of Behavioral Medicine in San Diego, CA).

Nicholson, R., Lakatos, C., Townsend, D., Meyer, A., and Gramling, S. (1999 March). Influence of Oral Habits and EMG on Pain Ratings Among Facial Pain Patients in a Stress-Reactivity Task. (Poster presented at the Annual Meeting of the Society of Behavioral Medicine in San Diego, CA).

Fries, E., Townsend, D., and Townsend, C.O. (1999 March). Understanding Responses to Food Frequency Questions in Adults Using Cognitive Interviewing. (Poster presented at the Annual Meeting of the Society of Behavioral Medicine in San Diego, CA).

Fries, E., Townsend, D., and Oswald, C. (1998 March). Contextual Cueing to Increase Accuracy of Self-Reported Dietary Recall. (Poster presented at the Annual Meeting of the Society of Behavioral Medicine in New Orleans, LA).

Oswald, C., Fries, E., and Townsend, D. (1998 March). Gender Differences in Dietary Behaviors with Increased Perceived Stress. (Poster presented at the Annual Meeting of the Society of Behavioral Medicine in New Orleans, LA).

Gramling, S., Nicholson, R., and Townsend, D. (1997 October). Facial Pain Patients and Controls in a Scheduled Waiting Competitive Task: Oral Habits and Patterns of Psychophysiological Responding. (Poster session presented at the Annual Meeting of the Association for the Advancement of Behavior Therapy in Miami, FL).

Chartrand, J., Nutter, K., Townsend, D. and Zanardelli, G. (1997 August). Career Indecision and Intervention Effectiveness: A Process and Outcome Study. (Poster session presented at the Annual Meeting of the American Psychology Association in Chicago, IL).

Gramling, S.E., Townsend, D., Nicholson, R., and Lanier, A. (1997 March). The Effects of Discrimination and Hostility on Cardiovascular Reactivity. (Poster session presented at the Annual Meeting of the SBM in San Francisco, CA).

Gramling, S.E., Nicholson, R., and Townsend, D. (1997 March). Muscle Hyperactivity in Response to Stressors in Individuals Symptomatic for Temporomandibular Disorders. (Poster session presented at the Annual Meeting of the SBM in San Francisco, CA).

Mancini, A.M., Gramling, S., and Townsend, D. (1996 November). The Effects of Discrimination and Hostility on Cardiovascular Reactivity: A Test of the Transactional Model. (Poster session presented at the Annual Meeting of the Association for the Advancement of Behavior Therapy in New York, NY).

Gramling, S., Nicholson, R., Townsend, D., Grayson, R., Sullivan, R., and Neblett, J. (1996 March). Schedule-induced EMG Muscle Reactivity Among Facial Pain Patients. (Poster session presented at the Annual Meeting of the SBM in Washington, DC).

Gramling, S., Townsend, D., Kruus, L., and Sullivan, T. (1996 March). Differential Effects of Relaxation Music Verses Neutral Sounds on Individuals with High and Low Levels of Hostility. (Poster session presented at the Annual Meeting of the SBM in Washington, DC).

Gramling, S., Grayson, R., Neblett, J., French, L., and Townsend, D. (1995 November). Myofascial Pain Disorder: Efficacy of a Habit Reversal Treatment Program. (Poster session presented at the Annual Meeting of the AABT in Washington, DC).

Gramling, S.E., Ciocco, J., Grayson, R., French, L., and Townsend, D. (1995 March). Habit Reversal Treatment for Myofascial Pain Disorder. (Poster session presented at the Annual Meeting of the SBM in San Diego, CA).

Fatis, M., Townsend, D.R., Wessel, T., Gilbertson, T., Stephens, T. and Duis, A. (1993 May). Nursing Home Caregiver Burden: Consequences for Certified Nursing Assistants. (Paper presented at the semi-annual meeting of the Midwest Association for Behavior Analysis and Therapy (MABAT) in Mankato, MN).

Fatis, M., Townsend, D.R., Wessel, T., and Gilbertson, T. (1993 October). Staff Burnout and Stressful Events in Nursing Home Special Care Units. (Paper presented at the semi-annual meeting of the MABAT conference in Minneapolis, MN).

Fatis, M., Townsend, D.R., Wessel, T., and Gilbertson, T. (1993 October). Targets for Behavioral Training for Nursing Home Staff at Risk for 'Burnout'. (Paper presented at the semi-annual meeting of the MABAT in Minneapolis, MN).

Townsend, D.R. (1992 October). Assessment of Aggression in Alzheimer's Patients. (Paper presented at the semi-annual meeting of the MABAT in St. Louis Park, MN).

Manuscripts Under Review:

Townsend, D., Nicholson, R., Buenaver, L.F., & Gramling, S.E. (1999). Habit Reversal Treatment for Chronic Facial Pain Utilizing a Minimal Therapist Contact Format. Manuscript (under review).

Townsend, D., Grayson, R., Neblett, J., Nicholson, R., and Gramling, S.E. (1999). Treatment of Chronic Facial Pain: A Comparison of Oral Habit Reversal With and Without a Cognitive Component. Manuscript (under review).

Fries, E., Townsend, D., and Oswald, C. (1999). Contextual Cueing to Increase Accuracy of Self-Reported Dietary Recall. Manuscript (under review).

Mancini, T., Gramling, S.E., and Townsend, D. (1999). Effects of Gender Discrimination and Hostility on Cardiovascular Reactivity. Manuscript (under review).

Manuscripts in Preparation:

Townsend, D., Gramling, S.E., Nicholson, R. and Lanier, A. (1999). The Effects of Discrimination and Hostility on Cardiovascular Reactivity. Manuscript in preparation.

Fries, E., Townsend, D., and Oswald, C. (1999). Cognitive Processes Involved in Dietary Recall. Manuscript in preparation.

Townsend, D., Gramling, S.E., and Schwartz, S. (1999). Stress Induced Oral Habits: An Example of Adjunctive Behavior? Manuscript in preparation.